CALIFORNIA HIGHWAY PATROL

SEMIAUTOMATIC PISTOL FIELD EVALUATION

OPERATIONAL PLANNING SECTION

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DISCLAIMER

The opinions, findings, conclusions and recommendations expressed in this report are those of the California Highway Patrol (CHP) and not necessarily those of the State of California. The contents of this report do not constitute standards, specifications, or regulations.

The findings determined through questionnaire evaluations pertain to experiences and observations encountered by the CHP in administering the Semiautomatic Pistol Field Evaluation. These findings are based on the evaluation of specific weapons, testing protocol and policies that existed during the administration of the study. These findings do not necessarily apply to weapon performance in situations where environmental or testing elements are different than those which existed during the Semiautomatic Pistol Field Evaluation.

The testing procedures and methods used by the CHP to evaluate weapon performance (during the study) do not necessarily conform to procedures or methods employed by other organizations involved in evaluating weapon performance. Data acquisition processes performed during the study were conducted by the CHP. Repeatability of study results may not be possible because of the highly variable nature of questionnaire responses and the complex nature of shooter-weapon-holster-ammunition interface. Therefore, the CHP does not intend that the study results expressed in this report be considered definitive under all conditions. Nevertheless, the contents of this report do express opinions and conclusions of the CHP, as well as the experiences encountered by the CHP during the administration of the study.

Acknowledgment is made of the use of studies, published accounts, brochures and material developed by manufacturers, other law enforcement agencies, and publishers of books and magazines. None of the material presented in this report, either by text or illustration, is intended as an endorsement of a specific model or make or any product which may be described or depicted herein.

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Executive Management of the California Highway Patrol had ultimate responsibility for the overall management and direction of the Field Evaluation. Members of Executive Management are:

MAURICE HANNIGAN, Commissioner

D. O. "SPIKE" HELMICK, Deputy Commissioner

JACK KELLAR, Assistant Commissioner, Staff Operations

KEN ANDERSON, Assistant Commissioner, Field Operations

REPORT CREDITS

Editor:	Captain Gary Townsend Operational Planning Section
Author:	Lieutenant Dan Baizer Operational Planning Section
Photography:	Officer Jeff Kahn Air Operations Unit
Cover Preparation:	Mr. Wayne Kubo Graphic Services Unit
Document Preparation:	Ms. Carol Gray Operational Planning Section
Raw Data Conversion:	Ms. Penny Yungling, Research Analyst II Operational Planning Section
Computer Assistance:	Officer Paul Crescenti Sergeant James Laginha Operational Planning Section

FIELD EVALUATION STAFF

Evaluation Coordinator - Don Hinton, Chief
Commander, Planning and Analysis Division

Evaluation Manager - Gary Townsend, Captain
Commander, Operational Planning Section
(former Manager - Bob Haworth, Captain)

Evaluation Officer - Dan Baizer, Lieutenant
Operational Planning Section

Training Supervisor - Ed Fincel, Sergeant
Weapons Training Supervisor, CHP Academy
(former Supervisor - Shawn Watts, Lieutenant)

Training Facilitator - Glenn Croft, Sergeant
Ontario Area (formerly of Valley Division)

Training Assistants:
Officer Larry Osborn
Officer Jane Randall
Officer Scott Wood
Weapons Instructors - CHP Academy

AREA/DIVISION PISTOL COORDINATORS

Officer Bob Bond	Northern Division
Officer Don Farnham	Valley Division
Officer Larry Gobin	Garberville Area
Officer Tony Gummert	Solano Area
Sergeant Stan Hannahs	Solano Area
Officer David Jagdeo	Solano Area
Officer John Ko	Solano Area
Officer Fred Limbocker	Valley Division
Officer John McCarville	Golden Gate Division
Officer Ed McClintick	Golden Gate Division
Officer Doug Northington	Bridgeport Area
Sergeant Benny Rich	Garberville Area
Officer Max Santiago	Golden Gate Division
Officer Neal Smith	Valley Division
Officer Joe Sobota	Bridgeport Area
Sergeant Stan Templeton	Garberville Area
Officer Al Valentine	Protective Services Unit (Sacramento)

TABLE OF CONTENTS

ANNEXES

TABLES

EXECUTIVE SUMMARY

A. PROJECT IMPETUS

In 1987, the California Association of Highway Patrolmen (CAHP) requested that Executive Management initiate a study of nine millimeter (9mm) semiautomatic pistols. The CAHP is the collective bargaining unit which represents the rank-and-file uniformed employees (Traffic Officers) of the California Highway Patrol (CHP). Executive Management agreed and the 9mm Field Evaluation (also described herein as the "study") commenced in January 1989.

In 1989, the CAHP requested that the Department also consider the features of 10mm weapon systems before adopting semiautomatic pistols as the official sidearms of the CHP. Executive Management agreed with the concept; however, it was decided that the 10mm evaluation would consist entirely of in-depth technical and range-performance evaluations by the Weapons Training Staff of the CHP Academy. The 10mm study will not encompass actual evaluation by participants in Field commands (as was the case with the 9mm evaluation).

This report details the findings of the 9mm semiautomatic pistol study, and presents ratings by which either of the following situations may prevail.

- If a 9mm pistol is selected to be the departmental handgun, the findings of the report may be utilized to justify the ultimate selection.
- If a 10mm pistol is selected, the findings of the report may be contributory toward the production of some specifications by which a pistol is deployed by the CHP.

B. STUDY APPROACH

The CHP used a hands-on approach in administering the Field Evaluation in a working environment. CHP personnel employed testing methods and evaluations which would produce findings easily applicable to the use of these weapons by any law enforcement agency. The primary consideration was to determine which weapon system best suited the needs of the widest possible range of assignments of uniformed personnel.

Assessment of the weapons was primarily focused on the experiences and observations of uniformed personnel during training, patrol, other regularly assigned duties and (whenever practicable) off-duty. The following methods were used to compare the various pistols and their features:

- Firing Range Questionnaires
- On-Duty Carry Questionnaires
- Weapons Comparison Questionnaires
- Jam/Misfire Rate Measurements
- Literature Review

C. STUDY ELEMENTS

1. Initial Questionnaires

The study began when the first instructors completed their training on January 28, 1989. The gathering of questionnaires ended on October 3, 1989. Questionnaires were submitted

monthly by all 153 participants and 18 instructors for "firing range" characteristics, and once every three months for "on-duty carry" evaluations which culminated in a rating of suitability for on- and off-duty carry. These questionnaires are featured as Annexes A and B, respectively, in this report.

2. Weapons Rotation

a. Only the 18 instructors rotated each of the different test weapons among themselves, and filled out the Weapons Comparison Questionnaires (see Annex C.). The other 153 participants essentially carried only one model of weapon during the course of the study, to ensure instinctual reactions which preserved officer safety. However, each participant received initial orientation in all five brands of weapons, should emergency situations arise in which mixed weapons are utilized in combat.

b. Training was consistent for all personnel. There was no need to mix revolver reloading tactics with those for pistols.

c. More rounds were fired through the weapons, thus extending the evaluation period for each weapon to allow for more complete analysis of maintenance needs.

3. Weapons Comparisons

a. Data Base

The questionnaire rating system is detailed in Annex D. The 18 instructors were instructed to compare the features of the weapons based on the following:

(1) Performance observed among the noncomparative test subjects (153 participants, each of whom carried one brand of weapon during the study).

(2) Hands-on comparisons of weapons, each rotated among fellow instructors, and evaluated during monthly requalification shoots and while being worn on (and off) duty.

(3) A "weapons comparison day" in September 1989, whereby each instructor would utilize up to 1,000 rounds of ammunition for refamiliarization at the range with all five brands of weapons, and with copies of the previously submitted questionnaires.

b. Test Weapons

Five particular brands of pistols were chosen because, at the date of commencement of the study, they were the only manufacturers who made identical twin weapon systems; that is, matching high-capacity and standard-capacity models. The need for concealability was conveyed to the Evaluation Officer when he addressed a conference of Division Vehicle Theft Coordinators, to discuss the upcoming study before it commenced. Their main concerns were concealability and firepower. Each manufacturer, in response to this need, makes a general duty weapon and a concealable one, both with identical mechanical features. The weapons are pictured in Annex E, and their individual features are listed in Annex F. The following models were utilized during the study.

High-Capacity Pistols	Standard-Capacity Pistols
Beretta 92F	Beretta 92F Compact
Glock 17	Glock 19
Heckler-Koch P7M13	Heckler-Koch P7M8
Sig-Sauer P226	Sig-Sauer P225
Smith & Wesson 5906	Smith & Wesson 3906

c. Data Reduction

The questionnaire responses were tallied by the Area/Division Coordinators onto control sheets (see Annexes G and H) to facilitate averaging of scores per inquiry subject. Control sheet scores were transposed onto rating sheets by the Research Analyst, which allowed for comparisons to be made via raw scores. The raw scores were converted to rating range scales (i.e., 20 points = minimum score, 100 points = maximum), for ease of review by readers of the study. The conversion was accomplished by means of the nomograph shown in Annex I. The responses to the questionnaires are explained, itemized, and listed in Annex J.

D. CONCLUSIONS

1. Objective

The objective of this Field Evaluation was to determine which pistol(s) best suits the needs of departmental personnel. Several concepts, tables, and annexes from the Study Design are reprised within this final report where needed.

2. Findings

a. Coordinators' Choice

Coordinators (local instructors) were asked to select the best overall weapon. They were directed to indicate their weapon of choice by means of the three criteria previously described (see 3.a.). Their choice was the Heckler-Koch in both sizes. Tables 11, 12, 13, and 14 graphically illustrate the margin of choice for both test groups (instructors and test subjects), through their responses on both sets of questionnaires. Annex J also provides a detailed perspective into the unique characteristics of each of the ten different pistols. It is significant that none of the various types of test weapons was found to be entirely unsuitable for use.

b. Other Selection Criteria

The report also provides comparisons of mechanical reliability from two levels of performance criteria (which are detailed within the narrative of this report):

(1) Maintenance and repair history

(2) Misfire and jam performance

E. RECOMMENDATION

It is recommended that the findings of this Field Evaluation be utilized in determining the specifications for any semiautomatic pistol which the Department selects, regardless of caliber. The specifications (featured in V.C, at the end of this report's narrative) detail those characteristics which are "critical" (mandatory), and those which are "desirable."

I. BACKGROUND

A. PROBLEM STATEMENT

1. Managing The Future

The nature of police work necessitates innovation, flexibility, willingness to change, and due consideration of emerging technologies. The Director of the Federal Bureau of Investigation (FBI), William S. Sessions, summed up the future of law enforcement needs concisely in a speech before the annual conference of the International Association of Chiefs of Police, on October 17, 1988:

> "...the 21st Century is around the corner. Law enforcement must prepare itself now for the challenges of tomorrow. We must use our skills and the tools available to us right now to out-run, out-gun, and out-think the criminals".

The Golden State is frequently placed in the position of being a high-profile social and organizational microcosm of nationwide issues. A renowned futurist in the law enforcement community, Dr. Gene Stephens (Professor, College of Criminal Justice, University of South Carolina) stated the following:

> "California is a bellwether state. The nation looks to California for innovation and direction. What California has now, the rest of the nation will have within a decade."

Shortly before his retirement, Commissioner James Smith stated, in the December 1988 edition of the California Highway Patrolman magazine, "be prepared to accept change". Commissioner Smith paved the way for that preparation by directing that this semiautomatic pistol study be undertaken. Commissioner Smith and his successor, Commissioner Maurice Hannigan, recognized that various elements of society were becoming better armed, and in many cases, more willing to wreak havoc upon the full range of victims — from children in school yards to law enforcement officers who work to ensure the safe, lawful, and efficient use of the highway transportation system.

2. Societal Concerns

Western society is becoming increasingly more violent. The manifestation of this tendency is evident when examining mortality figures. Since 1929 (the year in which the Department was created), 166 CHP officers have died in the line of duty. Thirty-seven of those officers died by gunfire. CHP officers have been involved in 550 combat shootings between 1970 and 1988 alone. Since 1985, the number of these incidents has generally risen each year. The total number of combat shootings since the creation of the Department in 1929 is estimated to have surpassed 1,500. It has been estimated by the California Public Employees Retirement System that it costs the State approximately $300,000 for each CHP officer's medical retirement and $800,000 per death.

The distance at which our personnel exchange gunfire is untypical in comparison to national statistics. The FBI estimates that the average exchange of bullets between police and suspect occurs at a distance of between three and six feet. The average distance for CHP shootings is 38 feet — approximately the initial distance between the drivers of two properly spaced vehicles on a freeway enforcement stop. This figure shares the spotlight with the FBI estimate that 20 to 27 percent of the officers who die by gunfire are shot with their own weapon, thereby shrinking the average distance between suspect and officer significantly.

The issue of "firepower" (frequently synonymous with high-cartridge capacity) is all-important when analyzing the trend of police shootings. The National Institute of Law Enforcement and Criminal Justice, under the aegis of the U.S. Department of Justice, conducted an in-depth study in 1975, as mandated by Congress. One conclusion of the study was that as more rounds were fired in combat from a revolver, accuracy decreased. Therefore, the performance of the revolver's bullet decreased because it was not striking the vital areas. Conversely, it was observed that the semiautomatic pistol had traits which facilitated accurate rapid-firing.

Similarly, reloading is crucial in many enforcement situations. For example, New York Police Department (NYPD) reported that during 1985, officers were involved in 47 combat shootouts with armed suspects. Eight of the officers in those situations had to reload their six-shot revolvers. NYPD has since joined the groundswell within the police community, and is transitioning to pistols for all their personnel.

California Highway Patrol officers are exposed to danger by the nature of their duties. The Department usually places within the top three law enforcement agencies in the State in terms of total number of felony arrests. This figure disguises an even more alarming picture, in that most weapon violations (e.g., carrying a concealed weapon, carrying a loaded weapon in public) have traditionally been punishable only as misdemeanors. Therefore, there is a strong likelihood of a CHP officer encountering an armed suspect in any part of the State.

Alcohol and drugs amplify violent tendencies, remove inhibitions, cloud judgment, and otherwise wreak havoc upon the sensibilities of human beings of all mental capacities. Members of the CHP have received worldwide recognition for their commitment to removing impaired drivers from the roads. The CHP accounts for 25-30 percent of the driving under the influence (DUI) arrests by all state police/highway patrols nationwide. All too frequently, these arrests become confrontational when chemical abuse overrides conscience. It has been determined by the California Commission on Peace Officer Standards and Training (POST) that 46 percent of the suspects who killed peace officers in California between January 1, 1980 and November 1, 1986 were under the influence of alcohol or drugs, or mentally ill.

There are 22 million vehicles and 18 million drivers registered in California. The majority of CHP officers work alone. There are 98 Area commands which deploy over 5,600 Traffic Officers and Sergeants. Also, there are 33 Resident Posts which deploy 113 Traffic Officers and Sergeants. Typically, CHP personnel in Resident Posts, are assigned to remote regions where back-up is rarely available. Generally, officers work alone in all Areas until 11:00 p.m. This deployment data is significant, because POST indicates that in 78 percent of the killings, and 58 percent of the assaults, the officers were assigned as one-person units. The standard police weapon during the time span of the POST study was a six-shot revolver. Without the benefit of a partner, officers are placed in the situation of having to reload while monitoring the locations and actions of suspects.

The CHP examined its assaults over a five-year span (not exclusively involving firearms). It was discovered that 28 percent of the assaulted officers were alone at the scene(s). Partners

The CHP examined its assaults over a five-year span (not exclusively involving firearms). It was discovered that 28 percent of the assaulted officers were alone at the scene(s). Partners or other backup were on-scene in 71 percent of the assaults.

The POST study further indicated that over 530 State and local peace officers were assaulted with firearms (during the seven year period) which could have resulted in their deaths. The data compares the officers' firepower to that of the suspects by pointing out that a secondary weapon was immediately available to the assailants in 36 percent of the killings and 26 percent of the assaults. Approximately 80 percent of the killed or assaulted officers carried revolvers as their primary (and frequently only) firearm. The POST study stated, "overall, the firearms used by the suspects were of high quality".

California Highway Patrol personnel are being increasingly exposed to the superior firepower of drug traffickers and street gangs. It has been estimated that 40 percent of the weapons confiscated in Southern California are semiautomatic or fully automatic (machine guns). The California Council on Criminal Justice issued a stunning document in January 1989, titled "State Task Force On Gangs And Drugs: Final Report". The following revelations were shared from the data pertaining to Los Angeles County alone:

- 387 gang-related homicides in 1987. As of November 1988, the figure increased over 24 percent.
- Over 1,400 murders committed within the last five years were gang-related.
- 600 to 650 gangs in the County, with membership between 60,000 and 80,000.

The Council reminds us that "...with ready access to assault-type weapons, gangs are better armed than most police..." and "gang members who once carried `Saturday Night Specials' now select Uzis and AK-47s".

3. Issued Equipment

California Highway Patrol sworn members are currently equipped with a .38 caliber revolver (or they may purchase and carry a 357 magnum revolver). A 12 gange shotgun is also available in a locked holder with the patrol car. Some Field commands have additional firepower by including .223 caliber long-range rifles in designated special patrol units.

B. PROPOSED SOLUTION

The Semiautomatic Pistol Field Evaluation not only involved actual deployment of weapons to various commands. Literature was also examined from other agencies' studies, popular publications and related books. The following attributes of semiautomatic pistols were lauded in those publications:

1. Pistols have higher cartridge capacity (9 to 18); revolvers carry five or six.
2. Pistols frequently feature decocking levers or safeties; revolvers do not.
3. Pistols are more capable of accurate rapid-fire shooting.
4. Pistols can last 2-1/2 times as long as revolvers.
5. Pistols can be reloaded faster and more safely than revolvers.

6. Pistols frequently feature indicators which show when the chamber is loaded, by sight and feel; revolvers must be opened to ascertain status.

7. Pistols produce less recoil, flash and noise than revolvers.

8. Pistols are ergonomically superior to revolvers, and are thereby easier for novice shooters to master.

9. Pistols are easier to maintain, inspect and repair in the Field than revolvers.

10. Spare parts for many pistols are cheaper than for revolvers.

11. Pistols are less likely than revolvers to become entangled in seat belts or clothing.

12. Police revolvers involved in combat gunfights average 25 percent accuracy; pistols average 65 percent.

13. Pistol handles are more adaptable than revolvers to the hands of small-handed shooters.

14. Many agencies report marked reductions in accidental discharges after transitioning to pistols.

15. Very few officers who have gone from the pistol to the revolver have requested to revert back to the revolver.

16. Shooting scores improve markedly in training settings, after transitioning to semiautomatic pistols.

C. PROLIFERATION OF PISTOLS

1. Worldwide Deployment

Military services and police agencies have been changing over to semiautomatic weapons from revolvers since the latter part of the Nineteenth Century. It is now rare to find a major military or law enforcement agency anywhere in the world which does not issue semiautomatic handguns to their personnel or permit their optional use. The past decade has seen a significant increase in the use of high (cartridge) capacity pistols. Some models feature a magazine capacity of up to nineteen rounds. A concurrent development during this period has been the birth of Special Weapons and Tactics Teams (SWAT). These teams were developed to deal with hostage or barricaded suspect situations. The SWAT officer has an extremely difficult and dangerous job. A recent study indicated that members of such units are ten times more likely to be involved in shootings than their uniformed counterparts. Most SWAT shootings involve the use of handguns by their officers. Research conducted during this study identified no SWAT organizations which use revolvers. All members utilize semiautomatic pistols, though the calibers may vary somewhat.

Double-action semiautomatic pistols have been the choice of those agencies seeking state-of-the-art advantages. Even though many models feature manual safeties, the preferred method of carry is with the safety off, in order to prevent any possibility of confusion during stressful moments. Such safeties are, instead, referred to as "decocking levers", which allow officers to safely clear the weapons without risking accidental discharges. One agency whose function parallels that of the CHP, the Illinois State Police, has been issuing semiautomatic pistols to its personnel for 22 years. During that time, no officers have been killed with their departmental handguns.

The U.S. Department of Defense has contributed to the recognition of the advantages of modern technology handguns, by their decision to transition to double-action pistols. All armed forces of the nation changed over to double-action pistols (officially designated as the M9) in 1985, following extensive laboratory and Field tests. The former military handgun was also a semiautomatic pistol (.45 ACP), but it did not have first-round double-action capabilities. The technological advantages of modern semiautomatic pistols made changeover the obvious choice for an armed force which strives to at least keep pace with military personnel throughout the world.

2. Interest Within the CHP

In April 1988, OPS surveyed the various Field commands of the CHP in order to ascertain the level of interest in participating in an evaluation of 9mm pistols. Within the survey, a determination was made that the level of interest was at least partially generated by some level of experience with pistols, as indicated in Table 1.

Total Survey Respondents	4805
Volunteers for the Evaluation	4019 (84%)
Volunteers Experienced in Carrying Semiautomatic Pistols (Any Caliber)	2737 (57%)

TABLE 1: Total Respondents

Executive Management directed that any Areas which were chosen to participate in a Field evaluation demonstrate 100 percent interest within the command. Twenty of the ninety-eight Areas (see Table 2) and all eight Investigative Services Units (ISUs) (see Table 3) responded that all Traffic Officers and Sergeants were willing to participate in the Field evaluation.

3. Allied Agency Survey

The survey of Field commands also sought to identify the compatibility of the various calibers and styles of weapons within the statewide law enforcement community. To that end, local Areas were requested to survey the allied agencies (police and sheriff's departments only) within the geographical confines of their commands. Annex K contains the results of the allied agency survey, by county.

There are 406 police and sheriff's departments in California. Table 4 summarizes the distribution of weapons, by caliber, which allied agency sworn personnel are allowed or required to carry. Semiautomatic pistols (especially the 9mm) are predominant.

Allied agencies have undertaken extensive changeover to 9mm and .45 caliber semiautomatic pistols, as illustrated in Table 5.

COMMAND	PERSONNEL
NORTHERN DIVISION	
Garberville	22
Susanville	18
Yreka	27
VALLEY DIVISION	
Truckee	34
Bridgeport	15
Chico	22
Stockton	66
Woodland	32
GOLDEN GATE DIVISION	
San Francisco	84
Solano	67
CENTRAL	
Sonora	18
SOUTHERN DIVISION	
West Los Angeles	80
BORDER DIVISION	
Winterhaven	21
Blythe	19
Rancho California	42
INLAND DIVISION	
Bishop	21
Needles	19
Ontario	69
Arrowhead	24
TOTALS (20)	719

TABLE 2: 100% Interest Area Commands

DIVISION	PERSONNEL
NORTHERN	11
VALLEY	16
GOLDEN GATE	18
CENTRAL	17
SOUTHERN	34
BORDER	20
COASTAL	08
INLAND	13
TOTAL	137

TABLE 3: 100% Interest Investigative Services Units

CALIBER	.38	357	9mm	.45ACP	.45LC	.41	.44	ANY
AGENCIES (406)*	219	226	260	194	16	13	24	11

TABLE 4: Weapon Calibers Among Allied Agencies

SEMIAUTOMATIC PISTOLS PERMITTED TO BE CARRIED	9mm only	.45 only	9mm or .45	Either 9mm or .45 or both
NUMBER OF AGENCIES PERMITTING SEMIAUTOMATIC PISTOLS TO BE CARRIED	110 (27%)*	65 (16%)*	260 (64%)*	336 (83%)*
PERSONNEL CARRYING SEMIAUTOMATIC PISTOLS	28,043 (55%)**	4,780 (9%)**	39,979 (79%)**	44,400 (88%)**

* Percentage of total allied agencies statewide (406 police and sheriff's departments) permitting semiautomatic pistols to be carried.

** Percentage of total allied agency personnel statewide (50,568) involved in carrying semiautomatice pistols.

TABLE 5: Agencies and Personnel Involved in the Carry of Semiautomatic Pistols

The research material for this study indicated no incidents where tactical difficulties arose from mixtures of revolvers and pistols. Table 6 illustrates the number of agencies which permit the use of semiautomatic pistols, while allowing their personnel to carry revolvers. In many cases, this mixture occurs because of the necessity to gradually transition groups of officers into pistols (for budgetary and operational reasons).

DEPARTMENTS USING .38 AND/OR .357 AND PERMITTING:	AGENCIES	PERSONNEL
9MM ONLY	207 (51%)*	36,017 (71%)**
9MM AND/OR .45 ACP	247 (61%)*	38,745 (77%)**

* Percentage of total allied agencies statewide (406 police and sheriff's departments) permitting semiautomatic pistols to be carried.

** Percentage of total allied agency personnel statewide (50,568) involved in carrying semiautomatic pistols.

TABLE 6: Agencies Mixing Revolvers and Pistols

II. STUDY DESIGN

A. PURPOSE

The purpose of the Field evaluation was to provide departmental management with Field use feedback and data which may serve as a basis for future weapon use policy and procurement.

B. OBJECTIVE

The objective of the Field evaluation was to identify which model(s) best suits the needs of departmental personnel.

C. GOAL

The goal of the Field evaluation was to produce a final report which compares the salient features of 9mm semiautomatic pistols. The findings should guide future decisions regarding the selection of salient features of on-duty weapons for uniformed employees.

D. SCOPE

Ten models of weapons were evaluated. These weapons were produced by the five manufacturers whose semiautomatic pistols are the most widely used within the law enforcement community. There is no implication that other models, or other brands, are unsuited for law enforcement use. Interestingly, four of the five manufacturers made modified models of the test weapons since the commencement date of the study (Beretta, Glock, Sig-Sauer and Smith & Wesson). Also, two other

manufacturers (Walther and Springfield Armory) came on-line with dual-size identical function models; again, too late to enter the study at the date of its commencement. Neither the new models nor the newly manufactured weapons could be added into the study; administrative convenience dictated that qualification for participation be limited to specific time frames.

E. FIELD EVALUATION PERIOD

The Field Operations phase commenced on January 28, 1989 and terminated on October 3, 1989. The following operational action steps were accomplished before the weapons were carried by on-duty personnel:

1. Selection and acquisition of holsters, magazine pouches, and other ancillary equipment.

2. Acquisition of ammunition (Federal 9mm Jacketed Hollow Point, 115-grain, via standard State contract with the California Department of General Services, Office of Procurement).

3. Armorer training of Academy gunsmiths by all five manufacturers.

4. Acquisition and preliminary testing of all test weapons before issuance to test subjects.

5. Training of trainers (Area/Division Pistol Coordinators and the Evaluation Officer by Academy personnel - 40 hours).

6. Initial training of test subjects (24 hours and 1,000 (rounds of ammunition per employee).

Review of related literature has been ongoing since the project was assigned to OPS on December 21, 1987. Similarly, examination of the related experiences of allied agencies has been ongoing since that date. Operational data was collected, sorted, batched and submitted to OPS by Area/ Division Pistol Coordinators throughout the evaluation period. The final report is required to be submitted to Executive Management no later than March 31, 1990.

F. FIELD OPERATIONS PHASE

1. Evaluation Commands

Command	Number of Test Subjects
Garberville Area	23
Bridgeport Area	17
Solano Area	70
Golden Gate Division ISU	21
Valley Division ISU	17
Protective Services Unit	03
Northern Division Drug Task Forces	06
Valley Division Drug Task Forces	07
Golden Gate Division Drug Task Forces	07
TOTAL	171

2. Site Selection Criteria

Executive Management indicated that it would be desirable to evaluate the weapons from the perspective of road patrol and specialized unit personnel. Therefore, three Area commands, two ISUs, the Protective Services Unit (in Sacramento), and three drug task forces were test sites. The specialized units generally experience similar working conditions statewide. The Area commands have diverse working environments. The following advantages have been identified in recommending the three chosen Areas as test sites:

Garberville Area

High Felony Exposure
Mini-14 Rifle Experience
Humidity
Cold Weather
Allied Agency Compatibility - 2/2
Semiautomatic Pistol Experience - 71%
Allied Agency Compatibility - 7/7
Semiautomatic Pistol Experience - 71%

Solano Area

Proximity to Academy Gunsmith
High Felony Exposure
Mini-14 Rifle Experience
Humidity
Seniority
Scale Facility
Semiautomatic Pistol Experience - 89%

Bridgeport Area

Severe Cold
Wind, Dust, Sand, Snow
Semiautomatic Pistol Experience - 71%

3. Personnel

All ranks of sworn personnel within each evaluation site participated in the study. Test weapons remained in those commands; they did not transfer with employees outside of the evaluation commands. Personnel who transferred into a test site were required to participate in the Field Evaluation. An administrative directive (Comm-Net Message) advising all uniformed employees of this rule was disseminated (see Annex L). No distinction was made between the various specialty assignments (e.g., Commander, Mobile Road Enforcement, public affairs, court liaison, scale facility officer, etc.).

A variance was instituted at the end of the Field operations phase regarding the return of the weapons. It was decided that the weapons (originally loaned to the Department by the manufacturers) would stay in the Field, instead of transitioning the personnel back into revolvers. The CHP undertook steps to purchase the pistols for the following reasons:

a. Reduction of Training Time

Phasing from one pistol to another is minimal, compared to pistol-to-revolver-to-pistol, once the Department selects the semiautomatic weapon of choice.

b. Reduction of Costs

Only one caliber of handgun ammunition needs to be stored in test commands — 9mm.

c. Officer Safety Concerns

The most common concern of expression emanating from the test commands has been the issue of turning in the pistols and going back to revolvers. Participants in the Field Evaluation expressed a firm belief that their firepower would be compromised by reverting back to revolvers.

d. Extended Data Base

The longer the pistols remain in use, the greater the maintenance/repair monitoring cycle. Extending the period of deployment provides for an effective measure of weapon durability.

e. Increased Knowledge

Personnel have transferred into test commands and replaced those who have transferred or promoted out. This process represents the Department's first effort at training an increasing number of personnel in pistols, albeit in small increments. Other agencies' studies indicated that the most vocal opponents of the change-over to pistols were won over as they underwent training. Knowledge instills confidence in the ability of the weapon (and the shooter), and dispels myths.

4. Training

All personnel involved in the Field operations phase were required to undergo an intensive initial qualification training class (approximately 24 hours). Monthly requalification training was also required. The standard revolver monthly practice consists of a 30-round course. Newly trained test subjects were allotted 60 rounds per month for the first three months after initial qualification, for purposes of refamiliarizing with the features of semiautomatic pistols.

5. Weapons Distribution

The evaluation examined the features of two sets of weapons — high capacity models and standard capacity models. Solano, Garberville and Bridgeport Areas evaluated the following high capacity models:

Beretta Model 92F

Glock Model 17

Heckler-Koch Model P7M13

Sig-Sauer Model P226

Smith & Wesson Model 5906

All other participants in the evaluation carried the following, more concealable, standard capacity pistols:

Beretta Model 92F Compact

Glock Model 19

Heckler-Koch Model P7M8

Sig-Sauer Model P225

Smith & Wesson Model 3906

Photographs of all models are featured in Annex E. Annex F contains vital information regarding the physical and mechanical features of all ten pistols.

6. Weapons Accountability

All weapons were initially shipped to the CHP Academy for examination by the gunsmiths and the Training Facilitator. Staff then made entries into the Master Security Log for each test command, indicating pertinent identification and qualitative data. The Log's function was to ensure the security of weapons, record the chain of custody, and track repairs. Annex M depicts the Log.

The weapons were then shipped with the Logs to the Area/Division Pistol Coordinators through the Manager of Supply Services Unit (who is responsible for maintaining inventory control of all departmental goods). Coordinators were charged with ensuring that the record-keeping requirements of the evaluation were performed efficiently. It was strongly recommended within the Study Design that all Logs be kept in a secure, locked area, in a location which is separate from that of the spare weapons. Tracking of holsters, magazines and magazine pouches was accomplished by means of credit memoranda between the Academy, test commands and Supply Services Unit.

7. Spares And Repairs

Field commands and the Academy maintained a selection of spare weapons, as reflected in Table 7.

HIGH - CAPACITY MODELS COMMAND	TEST WEAPONS		SPARES
SOLANO AREA	67		10
BRIDGEPORT AREA	17		05
GARBERVILLE AREA	23		05
ACADEMY			18
TOTALS	107	+	38 = 145 + 5 = 29 of each model
REGULAR - CAPACITY MODELS			
GOLDEN GATE ISU	18		05
GOLDEN GATE DRUG TASK FORCES	06		
VALLEY ISU	16		05
VALLEY DRUG TASK FORCES	07		
GOVERNOR'S PROTECTIVE UNIT	03		
NORTHERN DRUG TASK FORCES	05		05
ACADEMY			15
TOTALS	55	+	30 = 85 + 5 = 17 of each model

TABLE 7: Spare Weapons Distribution

Protocol for repair was discussed during the training of the Coordinators. The Coordinators were informed (and the Study Design stated) that mechanical malfunctions could only be repaired as authorized, depending on the degree of malfunction. The process required Coordinators to contact the Academy gunsmith staff to arrange for repairs, as needed. Coordinators were instructed to allow no other person(s) to dismantle or otherwise tamper with the mechanical features of the test weapons.

8. Administration

a. Evaluation Coordinator

The Chief of Planning and Analysis Division (PAD) was the Coordinator. His responsibilities included the following:

(1) Overseeing all aspects of the evaluation.

(2) Keeping Executive Management apprised of the status of the evaluation.

b. Evaluation Manager

The Commander of OPS was the Evaluation Manager. His responsibilities included the following:

(1) Monitoring evaluation progress.

(2) Reviewing and approving final evaluation documents.

(3) Acting as liaison between Field commands and the Evaluation Coordinator.

(4) Advising the Evaluation Coordinator of problems affecting the evaluation, and making recommendations for resolution.

(5) Overseeing data collection, analysis and report preparation.

c. Evaluation Officer

The Manager of OPS Planning Unit I was the Evaluation Officer. His responsibilities included the following:

(1) Coordinating assistance to commands participating in the evaluation.

(2) Preparing project documents.

(3) Collecting data to be studied.

(4) Analyzing data.

(5) Making presentations, as required.

(6) Providing liaison between the Department and product distributors.

(7) Preparing a final report.

(8) Informing the Evaluation Manager of problems affecting the evaluation, and making recommendations for resolution.

d. Training Supervisor

The Supervisor (Sergeant) of the CHP Academy Weapons Training Staff was the Training Supervisor. His responsibilities included the following:

(1) Ensuring that a training program is designed and presented to the Area/Division Pistol Coordinators.

(2) Selecting coordinators and other personnel to assist with training, equipment selection and acquisition, weapons inspections, ammunition selection, and reports which emanate from involved Academy staff.

(3) Overseeing the continuity and success of the Field operations phase of the evaluation.

(4) Informing the Evaluation Officer of problems affecting the evaluation, and making recommendations for resolution.

e. Area/Division Pistol Coordinators

The designated uniformed employees of each test site were the Pistol Coordinators. Their responsibilities included the following:

(1) Ensuring that the safety requirements of the training program remain paramount in the minds of all participants.

(2) Providing training to evaluation participants, as delineated in the approved training program.

(3) Ensuring the security of weapons and all related equipment through prudent practices and adherence to the procedures contained within the Study Design.

(4) Withdrawing defective weapons from the program and arranging for spares to be issued. This includes sending suspected defective weapons to the Academy, or other designee, for examination.

(5) Distributing, collecting, tallying, and batching questionnaires and control sheets.

(6) Advising the Training Supervisor of problems affecting the evaluation, and making recommendations for resolution.

9. Union Liaison

This evaluation was conducted in response to a request from the CAHP, which is the bargaining agent for Unit 5 employees (State Traffic Officers). Executive Management kept the CAHP advised of the progress of the evaluation, through the Office of Employee Relations (OER), which is located at the departmental headquarters in Sacramento. Managers and coordinators of the program responded through OER to inquiries from the CAHP. Representatives of the CAHP observed the training phase of the evaluation and were allowed to fire the weapons. Copies of the Study Design were furnished to staff of the CAHP; copies of the final report will also be provided.

III. PROGRAM EVALUATION AND METHODOLOGY

A. LITERATURE REVIEW

1. Allied Agencies

The "Background" portion of this report (see Section II) describes the environment which greatly contributed to the technology and notoriety relative to semiautomatic pistols. A vast amount of related studies and reports have been examined by OPS and Academy staff. The

literature has been utilized, to some extent, to guide the design of this evaluation. The following agencies have generously submitted their reports and studies for CHP review:

Connecticut State Police
Federal Bureau of Investigation
Fresno, CA Sheriff's Department
Georgia Department of Public Safety
Jacksonville, FL Sheriff's Department
Los Angeles Police Department
Los Angeles Sheriff's Department
Maryland State Police
Miami, FL Police Department
Michigan State Police
Montana Highway Patrol
Mt. Clemens, MI Police Department
New Jersey State Police
New York City Police Department
Ohio State Highway Patrol
Sacramento, CA Police Department
St. Paul, MN Police Department
Tennessee Department of Public Safety
United States Drug Enforcement Administration
United States Secret Service
Utah Highway Patrol
Washington, DC Metropolitan Police Department
Washington State Patrol

2. Professional Organizations And Associations

The evaluation drew upon the contributions found in numerous qualified periodicals, journals and special reports. The following have published resources germane to the subject matter of this report:

California Commission On Peace Officer Standards And Training
California Council On Criminal Justice, State Task Force On Gangs And Drugs, 1988-89
Ford Foundation
International Association Of Chiefs Of Police
National Institute Of Justice
National Institute Of Law Enforcement And Criminal Justice
National Rifle Association
Smith And Wesson Academy
United States General Accounting Office

B. FIELD INPUT

1. Questionnaires

a. Firing Range

Each evaluation participant was required to complete this questionnaire after every session on the firing range. Consequently, the weapons were evaluated on the range after initial qualification training, and during all requalification sessions. These questionnaires are depicted in Annex A.

The Area/Division Pistol Coordinators facilitated data analysis for OPS by collecting and batching the questionnaire responses onto control sheets (see Annex G). Originals of both types of forms were submitted to OPS. Copies were retained at the test commands.

b. On-Duty Carry

Each evaluation participant was required to complete this questionnaire every three months. The areas of inquiry pertain to the various aspects of comfort and safety which are not identifiable on the firing range. These questionnaires are depicted in Annex B.

Control sheets were also utilized in the same manner as described above. They are depicted in Annex H.

c. Weapons Comparisons

The original Study Design directed all participants to exchange weapons with one another, and to fill out this questionnaire (see Annex C) before turning in the final pistol. It was later decided by Executive Management that officer safety dictated otherwise — only the 18 local instructors would rotate and evaluate all weapons comparatively.

No control sheets were utilized for this questionnaire, because there were only 18 personnel. The responses to all questionnaires are summarized in the tables contained within Annex J.

2. Malfunction Information

Representative performance samples were gathered from all test commands and submitted to OPS. A distinction was made between jams (unexpended round or empty case stuck in the pistol) and misfires (ammunition which fails to fire).

3. Unusual Incidents

Coordinators were advised to ensure that documentation of incidents was forwarded to OPS whenever a test weapon was involved. Examples included accidental discharges, combat shootings, or assaults in which a suspects takes a weapon (or attempts to take it) away from an officer.

Coordinators later joined all other Field commands in submitting photos and reports to OPS of arrests, or other spectacular incidents, in which suspects were in possession of semiautomatic (or fully automatic) weapons of any kind. This background material proved illustrative in presentations where the subject matter pertained to the firepower gap between the criminal element and officers on the street.

4. Maintenance And Repair

The Academy gunsmith staff maintained records of the repair and maintenance demands upon the test weapons.

5. Clearing Tubes

The evaluation commands were issued the first departmental clearing tubes. These are metal containers which are partially filled with sand, and are the only authorized direction in which weapons may be pointed while the action is being cleared (other than at the range under the guidance of an instructor). One style of clearing tube is illustrated in Annex N.

IV. FINDINGS

A. QUESTIONNAIRE RESPONSES

Forty-two questions were answered and assigned ratings per weapon, for both test groups — 153 test subjects and 18 instructors. A "best over-all" weapon was identified (as detailed in C.3 and D.2 in the Executive Summary). More importantly, the greater bulk of responses have been utilized to formulate criteria to be utilized in the specifications for a departmental semiautomatic pistol.

B. MAINTENANCE AND REPAIRS

None of the weapons incurred unreasonable repair needs. The repairs are listed in Table 8:

Weapon Brand	Number of Pistols Repaired	Problem
Beretta 92F	0	N/A
Beretta 92F Compact	0	N/A
Glock 17	2	Slide stop
Glock 19	1	Slide stop
Heckler-Koch P7M13	1	Slide stop
Heckler-Koch P7M8	1	Barrel pin
Sig-Sauer P226	1	Slide stop
Sig-Sauer P225	0	N/A
Smith & Wesson 5906	0	N/A
Smith & Wesson 3906	1	Rough chamber

TABLE 8: Maintenance and Repairs

C. MISFIRES AND JAMS

Misfires (bullets which fail to ignite) and jams (bullets or spent casings which fail to chamber or eject properly) presented no major problems from any specific brand of pistol. Table 9 provides a listing of the rates of malfunction by model, and compares them to a composite average ("None Occurred" = highest rating; below that, higher numbers = lower frequency of misfires or jams):

Weapon Brand	Rounds per Misfire	Rounds per Jam
Beretta 92F	19,652	9,826
Beretta 92F Compact	None Occurred	None Occurred
Glock 17	2,211	885
Glock 19	2,512	793
Heckler-Koch P7M13	None Occurred	3,233
Heckler-Koch P7M8	6,883	13,765
Sig-Sauer P226	8,553	1,509
Sig-Sauer P225	15,292	318
Smith & Wesson 5906	21,967	1,569
Smith & Wesson 3906	None Occurred	1,863
Average for all pistols	7,932	1,283

TABLE 9: -Misfires and Jams

The most common cause of malfunction was shooter error; mainly, operating the pistol with a limp wrist. The second most common cause of malfunction was improper positioning of the hands.

The third most common cause of malfunction (three bullets) was defective ammunition. Only one weapon malfunctioned from dirt -- a very new Sig-Sauer P226 (after 250 rounds without cleaning). After further use and proper cleaning intervals, no weapons malfunctioned from being dirty. Weapons were required to be cleaned at the end of each four-hour or eight-hour training session.

D. UNUSUAL INCIDENTS

There were five occasions where test pistols were fired in conditions other than training. No weapons were found to be defective.

1. March 4, 1989

   Heckler-Koch P7M8

   An off-duty officer in his residence had just cleaned and loaded the weapon. The officer cocked the weapon and pulled the trigger, causing the weapon to discharge into a wall. No injury.

2. June 22, 1989

   Glock 19

   A drug task force officer was asked by a city police officer to show him his 9mm weapon. The loaded weapon was handed to the inquiring officer, who subsequently placed the weapon into

his own holster to see if it would fit. The city police officer then drew the weapon from his holster and caused the weapon to discharge into a wardrobe locker. No injury.

3. June 23, 198

Sig-Sauer P225

A drug task force officer serving a search warrant was confronted by a charging Pitbull dog. Two rounds were fired in self-defense, killing the animal. No injury to persons.

4. August 20, 1989

Glock 17

Two uniformed officers working a night-shift car made a felony stop, with their weapons pointed at two suspects. A third suspect suddenly appeared, lunged toward the officer's drawn pistol, and was fatally shot in the head. No injuries to other persons.

5. November 13, 1989

Smith & Wesson 5906

A uniformed officer was flagged down by the owner of a Pitbull which had just fatally attacked his 22-month old nephew. The owner asked the officer to dispatch the still-agitated animal, in order to remove the hazard. Two rounds were fired, killing the animal. No injuries to persons.

V. RECOMMENDATIONS

A. TRANSITION TO SEMIAUTOMATIC PISTOLS

The Department should issue pistols to all newly hired officers. Additionally, sufficient numbers of pistols and ancillary equipment (and spares) should be purchased to fully equip all uniformed members within the next two fiscal years. The Semiautomatic Pistol Field Evaluation demonstrated the advantages of pistols over revolvers.

B. TRAINING

1. Occupational Safety Concerns

Transitioning to the pistol should be accompanied by stringent requalification standards.

a. Departmental Experience

One of the major benefits of the Field Evaluation is that participants are required to requalify with their weapons monthly. This practice is universal within the other agencies which have transitioned to the pistol, as well. Not only is shooter proficiency ensured,

basic safety techniques are reaffirmed. Table 10 lists the previous seven year history of accidental discharges (involving all types of firearms, on- and off-duty) among uniformed CHP members:

Year	Accidental Discharges
1983	19
1984	16
1985	12
1986	6
1987	14
1988	16
1989	14
Yearly Average	13.86

TABLE 10: CHP Accidental Discharge Experience

b. Other Agencies

The literature review identified almost universal benefit in reducing accidental discharges via the pistol training program (not merely by the change to the weapon itself). This is significant, in that the effectiveness of safe pistol technological features diminish commensurately with decreased regularity of training. For example, Los Angeles Police Department reported an average annual rate of 48 accidental discharges while revolvers were carried by all personnel. During their two-year pistol study (involving one-third of their personnel), two pistols were involved in accidental discharges, and neither was caused by defects in the weapons. They attributed a great deal of this success to the thoroughness of the initial and ongoing training programs.

c. General Public

For the past 25 years, aspiring first-time hunters in California have been required to attend Hunter Education Classes before licenses are granted. In 1954 (the first year these classes were started), there were 20.8 hunting accidents for every 100,000 licensed hunters. By 1988, the rate had plummeted to 0.51. The success of this safety program is further evidenced by the fact that 1987 experienced 34 hunting accidents, of which five were fatal; in 1988, there were 23 hunting accidents, of which one was fatal. It is obvious that firearms safety training has been instrumental in saving lives among a population of people who usually do not carry a weapon for a living.

C. CRITERIA FOR SPECIFICATIONS

1. Comparative Analysis

Tables 11, 12, 13, and 14 illustrate the comparative ratings of both sets of weapons (high- and standard-capacity), by both sets of involved personnel (instructors and test subjects), for both sets of questionnaires. These ratings were instrumental in developing the critical and desirable criteria which follow:

INSTRUCTORS' RESPONSES

		HIGH CAPACITY PISTOLS						STANDARD CAPACITY PISTOLS					
QUES. NO.	CHARACTERISTIC	BER 92	GLOCK 17	HKP7 M13	SIG 226	S&W 5906	AVG. RATING	BER 92FC	GLOCK 19	HKP7 M8	SIG 225	S&W 3906	AVG. RATING
1	Carry Frequency, On-Duty in Uniform	98	92	100	90	90	94	54	60	42	68	42	53
2	Carry Frequency, On-Duty Out of Unif.	30	30	50	34	32	35	92	86	88	86	88	88
3	Firing Range Frequency	86	78	88	76	80	82	78	84	78	84	76	80
4	Enforcement Stop Unholster, Frequency	48	40	42	32	32	39	48	32	42	32	46	40
5	Ease of Unholstering	46	52	82	86	52	64	72	86	76	74	82	78
6	Ease of Reholstering	42	50	82	90	56	64	72	86	78	70	78	77
7	Unsolicit. Comments, Allied Agencies	90	88	94	90	74	87	74	84	86	86	82	82
8	Unsolicit. Comments, Other Citizens	80	80	86	84	82	82	68	76	72	70	76	72
9	Carrying Comfort, Walking	88	92	96	90	88	91	78	90	90	80	78	83
10	Carrying Comfort, Standing	48	60	84	80	44	63	52	88	92	68	70	74
11	Carrying Comfort, Sitting in Vehicle	40	54	94	78	76	62	52	88	92	70	68	74
12	Carrying Comfort, Sitting in Chairs	38	56	90	82	44	62	52	88	92	70	68	74
13	Carrying Comfort, Mag. Pouch	38	56	90	82	44	62	52	88	92	70	68	74
14	Accessibility of Mag. Pouch	32	50	88	82	50	60	68	80	86	78	88	80
15	Security of Weapon in Holster	50	54	72	80	60	63	62	88	66	76	78	74
16	Security of Mag. in Pouch	52	56	66	78	62	63	68	90	74	78	82	78
17	Security of Mag. in Weapon	44	58	86	68	62	63	76	80	76	70	78	76
18	Suitabil. for Off-Duty, Based on Weight	68	84	82	64	58	71	70	92	84	78	76	80
19	Suitabil. for Off-Duty, Based on Physical Dimensions	64	78	88	62	60	70	70	92	82	78	74	79
20	Suitabil. for Off-Duty, All Factors Considered	32	58	94	80	42	61	46	90	90	68	74	74
Average Rating		56	63	83	75	58	67	65	82	79	73	74	75

TABLE 11: On-Duty Carry Questionnaire

TEST SUBJECTS' RESPONSES

		HIGH CAPACITY PISTOLS						STANDARD CAPACITY PISTOLS					
QUES. NO.	CHARACTERISTIC	BER 92	GLOCK 17	HKP7 M13	SIG 226	S&W 5906	AVG. RATING	BER 92FC	GLOCK 19	HKP7 M8	SIG 225	S&W 3906	AVG. RATING
1	Carry Frequency, On-Duty in Uniform	98	92	100	90	90	94	54	60	42	68	42	53
2	Carry Frequency, On-Duty Out of Unif.	30	30	50	34	32	35	92	86	88	86	88	88
3	Firing Range Frequency	86	78	88	76	80	82	78	84	78	84	76	80
4	Enforcement Stop Unholster, Frequency	48	40	42	32	32	39	48	32	42	32	46	40
5	Ease of Unholstering	88	84	86	94	72	85	88	78	74	80	72	78
6	Ease of Reholstering	86	80	78	90	76	82	88	78	80	82	72	80
7	Unsolicit. Comments, Allied Agencies	90	88	84	90	74	87	74	84	86	86	82	82
8	Unsolicit. Comments, Other Citizens	80	80	86	84	82	82	68	76	72	70	76	72
9	Carrying Comfort, Waking	88	92	96	90	88	91	78	90	90	80	78	83
10	Carrying Comfort, Standing	92	92	96	92	88	92	76	88	88	80	78	82
11	Carrying Comfort, Sitting in Vehicle	86	88	96	90	84	89	72	88	86	82	76	81
12	Carrying Comfort, Sitting in Chairs	88	86	92	86	78	86	70	88	86	80	76	80
13	Carrying Comfort, Mag. Pouch	78	90	92	86	80	85	72	72	76	72	74	73
14	Accessibility of Mag. Pouch	86	92	94	90	86	90	78	76	76	80	78	78
15	Security of Weapon in Holster	100	100	100	100	100	100	100	100	100	100	100	100
16	Security of Mag. in Pouch	100	100	100	100	100	100	100	100	100	100	100	100
17	Security of Mag. in Weapon	100	100	100	98	98	99	98	100	100	98	100	99
18	Suitabil. for Off-Duty, Based on Weight	68	84	82	64	58	71	70	92	84	78	76	80
19	Suitabil. for Off-Duty, Based on Physical Dimensions	64	78	88	62	60	70	70	92	82	78	74	79
Average Rating		82	83	87	86	77	83	78	82	81	80	77	80

TABLE 12: On-Duty Carry Questionnaire

INSTRUCTORS' RESPONSES

		HIGH CAPACITY PISTOLS						STANDARD CAPACITY PISTOLS					
QUES. NO.	CHARACTERISTIC	BER 92	GLOCK 17	HKP7 M13	SIG 226	S&W 5906	AVG. RATING	BER 92FC	GLOCK 19	HKP7 M8	SIG 225	S&W 3906	AVG. RATING
3	Weapon Feel (least weight)	44	82	88	80	42	67	54	92	82	78	66	74
4	Mag. Insert. Effort (slide locked open)	56	52	86	86	46	65	66	68	84	64	86	74
5	Mag. Insert. Effort (slide locked closed)	54	62	84	78	48	65	66	368	84	64	86	74
6	Mag. Release Placement	58	42	90	76	54	64	62	66	92	66	82	74
7	Mag. Release Effort	58	34	90	76	52	62	67	56	80	74	88	73
8	Slide Release Placement	58	54	88	78	50	66	62	70	94	74	66	73
9	Slide Release Effort	58	52	88	80	44	64	66	68	92	70	68	73
10	Slide Operation Effort (manual)	68	58	78	82	40	65	68	64	90	66	82	74
11	Decock. Lever Placement	56	N/A	N/A	82	52	63	70	N/A	N/A	88	78	79
12	Decock Lever Effort	60	N/A	N/A	78	48	62	72	N/A	N/A	90	66	76
13	Safety Placement (if applicable)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	Safety Effort (if applicable)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	Sight Pickup	50	64	94	68	56	66	54	84	90	58	82	74
16	Accuracy	46	48	98	80	48	64	66	74	92	66	72	74
18	Dbl. Act. Trig. Pull, Finger Placement	50	62	N/A	62	50	56	64	88	N/A	78	82	78
19	Dbl. Act. Trig. Pull, Effort	58	74	N/A	84	44	65	70	86	N/A	74	84	79
20	Sgl. Act. Trig. Pull, Finger Placement	64	N/A	86	82	56	72	68	N/A	86	78	86	80
21	Sgl. Act. Trig. Pull, Effort	58	N/A	90	82	50	70	70	N/A	86	74	88	80
22	Recoil (least harshness)	54	58	94	80	46	66	68	380	90	56	72	73
23	Recovery Time	56	56	88	84	48	66	60	84	94	58	70	73
24	One hand Unsupport. Shooting	50	66	90	72	44	64	68	74	80	68	72	72
25	Muzzle Flash (least harshness)	58	66	86	88	54	70	62	76	82	64	78	72
26	Grip Finish	46	46	84	80	54	62	60	74	84	82	68	74
27	Disassembly (least difficulty)	68	54	76	86	32	63	76	52	80	76	60	69
28	Reassembly (least difficulty)	66	62	74	84	32	64	78	76	70	76	66	73
29	Best Weapon (weapon of choice)	52	46	88	82	36	61	62	76	80	66	72	71
Average Rating		56	57	87	80	47	65	66	74	86	71	76	74

TABLE 13: Firing Range Questionnaire

TEST SUBJECTS' RESPONSES

		HIGH CAPACITY PISTOLS						STANDARD CAPACITY PISTOLS					
QUES. NO.	CHARACTERISTIC	BER 92	GLOCK 17	HKP7 M13	SIG 226	S&W 5906	AVG. RATING	BER 92FC	GLOCK 19	HKP7 M8	SIG 225	S&W 3906	AVG. RATING
3	Weapon Feel (least weight)	62	82	62	68	60	67	66	78	76	66	60	69
4	Mag. Insert. Effort (slide locked open)	88	86	92	90	84	88	84	80	88	80	84	83
5	Mag. Insert. Effort (slide locked closed)	86	86	94	88	84	88	84	84	90	78	84	84
6	Mag. Release Placement	80	78	88	88	80	83	82	72	88	68	78	78
7	Mag. Release Effort	84	68	90	88	78	82	82	68	92	80	80	80
8	Slide Release Placement	78	84	98	82	72	83	84	78	92	82	70	81
9	Slide Release Effort	84	86	94	82	70	83	80	72	92	82	72	80
10	Slide Operation Effort (manual)	80	84	78	82	72	79	78	82	82	78	76	79
11	Decock. Lever Placement	76	N/A	94	86	78	84	82	N/A	92	82	84	85
12	Decock Lever Effort	76	N/A	94	88	78	84	80	N/A	90	86	80	84
13	Safety Placement (if applicable)	96	88	90	N/A	64	85	82	66	82	N/A	60	73
14	Safety Effort (if applicable)	76	88	90	N/A	72	82	80	66	80	N/A	62	72
15	Sight Pickup	74	86	94	84	84	84	76	82	94	74	88	83
16	Accuracy	84	88	96	92	86	89	82	88	96	80	86	86
18	Dbl. Act. Trig. Pull, Finger Placement	80	86	N/A	80	78	81	78	84	N/A		80	79
19	Dbl. Act. Trig. Pull, Effort	72	80	N/A	70	68	73	68	76	N/A	64	74	71
20	Sgl. Act. Trig. Pull, Finger Placement	84	92	96	88	84	89	84	66	86	82	84	80
21	Sgl. Act. Trig. Pull, Effort	84	84	90	82	76	83	80	66	86	78	80	78
22	Recoil (least harshness)	76	80	82	76	74	78	74	78	82	70	72	75
23	Recovery Time	80	84	74	80	76	79	78	84	88	76	78	81
24	One hand Unsupport. Shooting	76	80	88	76	72	78	74	76	84	72	70	75
25	Muzzle Flash (least harshness)	74	82	80	76	72	77	76	82	84	74	78	79
26	Grip Finish	82	86	86	80	74	82	80	88	84	82	82	83
27	Disassembly (least difficulty)	90	90	94	88	76	88	86	92	94	84	80	87
28	Reassembly (least difficulty)	88	92	90	88	76	87	86	94	94	82	78	87
Average Rating		80	84	88	83	76	82	79	78	88	77	77	80

TABLE 14: Firing Range Questionnaire

2. Bid Process

The evaluation methodology identified critical or desirable qualities and characteristics for pistols. Traditionally, State agencies are required to develop justifiable criteria for specifications, which in turn are submitted to potential bidders for sales and service contracts. The bidders respond to the specifications with their price, as well as suggestions or questions for clarification of the specifications or the process itself. The State agency which submitted the invitations for bid then evaluates the bids from several a perspectives:

The bids are examined by a bid committee and rated on a variety of weighted factors. The bidder winning the most points is advised they are being considered for award of the contract. The other bidders are advised of the reasons for their lack of success. A period of time is allotted for those who protest the bid. The award of the contract may be proceed after all reasonable concerns are addressed in accordance with the rules of the State Administrative Manual.

3. Critical (Mandatory) Criteria

The following list is not all inclusive, but reflects some of the characteristics which the study identified as necessary components within the specifications for a 9mm semiautomatic pistol. The comparative values of these items will be determined before bids are solicited:

a. Dual Size

The weapons shall be available in high-capacity and standard-capacity models which function identically.

b. Warranty

Weapons and parts shall be accompanied by reasonable guarantees for replacement and repair.

c. Training

The Department's training needs (e.g., gunsmith, Academy training staff, local command trainers) shall be augmented by staff from the bidder.

d. Magazine

(1) Effort required for insertion and extraction shall not be excessive.

(2) High-capacity model magazines shall routinely carry at least 13 rounds entirely within the confines of the handle; standard-capacity model magazines shall routinely carry at least 8 rounds entirely within the confines of the handle. "Entirely within the confines" pertains to the magazine that normally comes with the retail sale of the weapon to the public (not special extended optional models).

(3) Placement of the release mechanism shall be convenient and secure, to preclude overly difficult or unintended activation.

(4) Ammunition shall not bind inside the magazine, nor at the exit lips.

e. Slide

(1) Effort required for release and operation shall not be excessive for operators of any size or strength of hands.

(2) Placement of the release mechanism shall be convenient and secure for left- and right-handed operators..

f. Sights

(1) Sights shall function optimally (for target pickup), shall not snag clothing, will not jar loose and shall be adjustable for windage.

(2) Sights shall be finished so as to reduce glare.

g. Accuracy

The accuracy of weapons shall be reasonable in comparison to other makes and models evaluated in the Field Evaluation. CHP may determine compliance with this criteria either by hand-held or fixed-device shooting tests. Accuracy is crucial to second and subsequent firings, such that shot placement groups are reasonably precise.

h. Trigger Pull

(1) Double action pull (where applicable) shall be between 8 - 16 pounds. Single action pull (where applicable) shall be between 4 - 7 pounds.

(2) The action shall not be rough, nor inconsistent between rounds.

(3) The trigger guard shall be of sufficient clearance to allow for the use of unlined leather skin gloves.

i. Recoil

(1) Recoil shall not be excessive.

(2) One hand unsupported shooting shall be reasonably free from difficulty.

(3) Recovery time between shots shall not be excessive.

j. Muzzle Flash

Muzzle flash (day or night) shall not be excessive.

k. Finish

(1) Weapons shall not be unreasonably susceptible to corrosion, pitting, galling, cracking or chipping.

(2) The surfaces of the weapon shall not be sharp, nor shall they be so constructed that the shooters hands or fingers are pinched (while properly positioned).

(3) The grips shall not be slippery in bare hands.

(4) Surface glare from reflected light shall be minimal.

l. Assembly

Disassembly and reassembly shall not be difficult for operators in Field conditions.

m. Reliability

(1) Ammunition shall feed, chamber, fire, and extract with reasonable reliability.

(2) Misfeeds, misfires and jams shall be clearable with relative ease, without the use of any tools or objects other than the operator's bare hands.

(3) No part of the weapon or its ammunition shall be so designed or constructed that malfunction will endanger the operator, either by explosion or components separating from the weapon.

n. Safety Features

(1) The weapon shall not be capable of firing by being dropped, struck or kicked.

(2) The weapon shall be designed and constructed so that the operator may decock it after firing by other than the standard manual method of pulling the trigger with one finger, and lowering the hammer with the other hand or fingers.

(3) The weapon shall not fire more than one round upon a single depression of the trigger.

(4) The weapon shall be incapable of firing unless the trigger is pulled back (as trained by CHP instructors).

4. Desirable Criteria

a. Assembly

Disassembly and reassembly shall not require the use of tools or objects other than the bare hands of the operators.

b. Safety

(1) The weapon shall be equipped with a user safety system, such that an unauthorized operator may be thwarted by the trigger over-ride mechanism.

(2) The over-ride mechanism shall be conveniently placed for the authorized operator, and shall not require excessive effort to activate or deactivate.

(3) The over-ride mechanism shall not be unreasonably capable of being accidentally activated or deactivated by the authorized operator.

D. CONCLUSIONS

The Department should solicit bids for semiautomatic pistols, based on critical features which were identified in the study. Competitive points should be awarded to bidders whose weapons additionally satisfy the desirable features which were also identified within this report.

State of California

Business, Transportation and Housing Agency

Memorandum

Date: August 2, 1989

To: Planning and Analysis Division

From: DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
Operational Planning Section

File No.: 41.8492.A6555.6108o

Subject: BUDGET CHANGE PROPOSAL FISCAL YEAR 1990/91 - SEMIAUTOMATIC PISTOLS

The Commissioner has directed that the Budget Change Proposal (BCP) be prepared and forwarded expeditiously, so that approval steps may be commenced to acquire $1,300,000 for the purchase of 3,750 pistols. Operational Planning Section (OPS) has also been directed to format the BCP as a first step toward a two-year purchase plan. Therefore, it is requested that a regular line item be prepared by Budget Section for the 1991/92 budget, for at least the same amount ($1,300,000), so that the other half of the Department may be equipped with pistols.

The BCP is nonspecific to caliber, in case other weapons are deemed worthwhile for purchase within the next eight months. Glock and Smith & Wesson representatives have indicated that they will bring a 10mm prototype to Headquarters within four months, and demonstrate them to interested personnel. There are no other manufacturers who presently build a double action 10mm pistol.

The Federal Bureau of Investigation (FBI) has invited other manufacturers to participate in the competition for their potential change-out to that caliber. The FBI has encountered structural deformation problems with the prototypes, and has asked the manufacturer (Smith & Wesson) to modify the metallurgical characteristics. They have also found the ammunition to be too harsh, and are making their own "down-loaded" cartridges in order to reduce recoil, flash, noise and metal fatigue. The Special Agents Association has conveyed their concern about the bulkiness of the weapon. FBI Academy staff have also expressed an interest in creating a "10mm Short" weapon and bullet, to accommodate trainees with small hands.

Asset Forfeiture funds have been identified for purchase of ammunition and equipment. The estimated prices for those items is as follows, for each of the two years:

3,750 holsters @ $80	$ 300,000
3,750 magazine pouches @ $35	131,250
7,500 magazines @ $25	187,500
3,750,000 rounds of ammunition @ $135 per 1,000 rds	506,250
TOTAL	$1,125,000

The total estimated cost will be reduced by the following adjustments:

- Less .38 and .357 ammunition will be needed.
- Spare revolvers (approximately 100 per year) will not be needed.
- Revolvers will be sold as they are phased out. If 3,750 are sold, they may bring approximately $100 to $175 a piece, depending on the model (for a total of $375,000 to $656,250). OPS staff obtained three bids for obliteration of the "CHP" stamping. The cost for stainless weapons varied between $7.50 and $15.00, for a total cost (involving 3,750 products) between $28,175 and $56,250. We also have 330 blue weapons. The obliteration and rebluing costs ranged between $35 and $40 each, for a total cost of $11,550 to $13,200. The Academy estimated a much higher cost if our gunsmiths are utilized -- one PY (personnel year) for each of the two years.

It is also possible that cheaper holsters and pouches may lower the cost of initial equipment purchases. However, the high end estimates have been utilized because it is in the best interests of officer safety for Academy staff to evaluate holsters for comparison (there are over 150 manufacturers).

It is recommended, therefore, that $1,125,000 be initially budgeted from Asset Forfeiture funds for the transition to semiautomatic pistols for each of the two years. The account will be replenished by the variables indicated above, such that the actual expenditure should be approximately $750,000 per year.

Academy staff are developing a training plan, to include the concept of regional trainers and initial cadet training. Academy staff are also looking at holsters and pouches.

Budget Section has examined a rough draft of this package and concurs with the content and format. It is nonconventional, in that it reflects Executive Management's directive that it be replete with statistics and photographs. Understandably, it will require extraordinary support to weather the various levels of review. To that end, a Comm-Net Message was sent to all commands, encouraging the gathering of gun-related incident information and photographs. That material is being submitted directly to OPS, should it be necessary to better illustrate our need in future meetings or hearings.

Questions regarding the BCP should be referred directly to me or Lieutenant Dan Baizer, at 445-1626.

R. Q. HAWORTH, Captain
Commander

Attachments

ISSUE MEMO

TO: GEORGE DEUKMEJIAN, Governor

Date: _____

FROM: M. J. HANNIGAN, Commissioner
California Highway Patrol

/ / Response to Request by

Prepared By: R. Q. HAWORTH, Captain
Operational Planning Section

/X/ Request for Approval */X/ Self Initiated Correspondence* *For Your Signature* */ / For Your Information*

SUBJECT: Purchase of semiautomatic pistols by the California Highway Patrol (CHP).

ISSUE: Should the CHP purchase three thousand seven hundred fifty (3,750) semiautomatic pistols in the amount of $1,500,000?

RECOMMENDATION: The CHP requests this memo be forwarded to the Governor for his consideration, as it relates to the 90/91 Fiscal Year BCP, for the purchase of these weapons (to equip half of the Department). The CHP will later request to budget sufficient funds to equip the other half of the Department in the 91/92 Fiscal Year.

ARGUMENTS PRO: CHP officers are currently equipped with a .38 caliber revolver. A 12 gauge shotgun is also available in a locked holder within the patrol car. Although the revolvers are capable of inflicting lethal wounds, their design and performance is grossly inferior to that of semiautomatic pistols. Specifically, semiautomatic pistols excel in the following manner:

- Pistols have higher cartridge capacity (9 to 18); revolvers carry 5 or 6.
- Pistols have decocking levers or safeties; revolvers do not.
- Pistols are more capable of accurate rapid-fire shooting.
- Pistols last 2-1/2 times as long as revolvers.
- Pistols can be reloaded faster and more safely than revolvers.
- Pistols indicate when the chamber is loaded, by sight and feel; revolvers must be opened to ascertain status.

- Pistols produce less recoil, flash and noise than revolvers.
- Pistols are ergonomically superior to revolvers, and are thereby easier for novice shooters to master.
- Pistols are easier to maintain, inspect, and repair.
- Spare parts for pistols are cheaper than for revolvers.
- Pistols are less likely than revolvers to become entangled in seat belts or clothing.

California Highway Patrol officers are facing an increasingly heavily armed population of violent offenders. The weapon of choice for these offenders is rapidly becoming the semiautomatic pistol, rifle, or machine gun. CHP officers are at a severe disadvantage regarding their effective counter-fire capability. A 1988 survey of the police and sheriff departments in California revealed that 83 percent of the 406 agencies (and 88 percent of the sworn personnel) authorize or mandate the on-duty carrying of semiautomatic pistols. They recognize the danger of sending under-equipped officers onto the streets.

Deployment of these weapons would allow CHP officers to more safely and effectively carry out their responsibilities at incidents where they may face a deadly threat. It would also prevent unfavorable publicity resulting from such incidents if we were unable to adequately respond or protect our officers, other officers or citizens due to the lack of such weapons.

ARGUMENTS CON: Certain members of the public might argue that these types of defensive weapons are not needed; however, the arguments provided in the background would overcome any of these concerns.

BACKGROUND: Officers of the CHP have been involved in 550 combat shootings between 1970 and 1988. Of the 166 who have perished in the line of duty since 1929, 37 died by gunfire. Officers are being increasingly exposed to the superior firepower of drug traffickers, street gangs and weapons smugglers. It has been estimated that 40 percent of the weapons confiscated in Southern California are semiautomatic or fully automatic (machine guns).

Similarly, there is a continuing likelihood of CHP officers becoming involved in a lethal altercation with intoxicated individuals. The CHP accounts for 25 to 30 percent of the arrests for DUI (driving under the influence) by all state police/highway patrols nationwide. The CHP also ranks third, among all law enforcement statewide, for the number of felony arrests made by its officers. We are a high profile organization, and we are frequently called upon to assist State, local, and federal law enforcement agencies. All too often, our officers have encountered superior firepower while assisting these agencies.

APPROVAL:

M. J. HANNIGAN Commissioner California Highway Patrol	Date	JOHN K. GEOGHEGAN Secretary Business, Transportation and Housing Agency	Date
MICHAEL R. FROST Chief of Staff	Date	GEORGE DEUKMEJIAN Governor	Date
DAVID CAFFREY Cabinet Secretary	Date		

CALIFORNIA HIGHWAY PATROL
BUDGET CHANGE PROPOSAL #12
1990-91 FISCAL YEAR

SEMIAUTOMATIC PISTOLS $1,300,000

PROPOSAL

This request is for funds to purchase three thousand seven hundred and fifty (3,750) semiautomatic pistols to be assigned to sworn personnel, so that they may be more capable of defending themselves against an increasingly well-armed population of violent offenders. The total net expenditure required for this request is $1,300,000 per year for two years, with equal amounts of weapons to be purchased each year (totalling 7,500 weapons over a two year period, at a two year cost of $2,600,000). The total cost of the semiautomatic pistols is reduced to the requested amount by the eventual sale of currently issued revolvers as they are phased out of service. All other costs will be absorbed from operational funding.

Attachment A indicates the methodology used to determine the funding need.

PROBLEM CREATING THE NEED

Departmental Combat Shootings

A historical analysis of departmental shootings reveals that members of the California Highway Patrol (CHP) have been involved in 550 combat shootings between 1970 and 1988. This time span represents only one third of the history of the CHP, and the total number of combat shootings since the creation of the Department (in 1929) is estimated to have surpassed two thousand. Thirty-seven members of the CHP have died from shooting incidents while on duty.

Attachment B is a photograph of the most tragic shooting incident in the history of the CHP. On April 5, 1970 four CHP officers were killed by two armed suspects in Newhall. The photo shows the location where one of the officers was killed while trying to reload his revolver. Witnesses heard the suspect laughingly state, "I've got you now."

Attachment C is a photograph of the aftermath of a 1977 incident in Los Angeles. Two officers attempted to stop a speeding vehicle on the San Diego Freeway. As they exited on the curved off-ramp of Victory Boulevard, the suspect waited at the bottom of the ramp with a semiautomatic rifle and fired over thirty rounds into the CHP vehicle, wounding one of the officers before the suspect was incapacitated.

Attachment D is a photograph of a man shooting a semiautomatic rifle at passing police cars in Oakland, on February 15, 1985. The suspect (a distraught self-employed gun dealer) planned to shoot and kill a police officer, steal the police car, drive to Alaska, and live in the wilderness. He fired over 100 rounds from two semiautomatic rifles at three police cars, injuring all three officers. He stopped shooting only because the first rifle jammed and he accidentally dropped the rest of his ammunition for the remaining rifle while running away from the officers. Nevertheless, he was able to reload twice while laying down a barrage of fire which successfully kept all three officers pinned down, unable to shoot back. Miraculously, a photographer happened to be passing by during the shooting. The circles highlight expended cartridges flying through the air or lying on the ground.

Attachment E is a photograph of some of the weapons typically confiscated by CHP officers. The collection illustrates the variety and lethality of items which fall into the hands of offenders who have been arrested by CHP officers. Early in 1985, the Department conducted a review of incidents that had occurred in one of our eight Field Divisions (Northern Division) from 1975-1985 involving heavily armed adversaries. It was found that most of Northern Division's fourteen Areas had experienced incidents involving suspects who were armed with various types of weapons, ranging from .22 caliber rifles to bazookas and rocket launchers.

Heavily Armed Drug Traffickers

It must be considered that there is a proliferation of drug related activities in the rural regions of the State. These activities include growing/cultivating huge crops of marijuana, the establishment of numerous illicit drug manufacturing labs, and the smuggling of billions of dollars worth of drugs from foreign countries (to the extent that the U.S. Department of Customs has formally requested an ongoing pact of mutual interdiction between their agency and the CHP).

Additionally, it is well established that drug traffickers continue to arm themselves with automatic weapons which not only provide superior fire power against traditional police weapons, but are also easily concealable within a vehicle or on the person. Many citizens who reside or recreate in these rural regions own, and keep available, a variety of weapons including large caliber hunting rifles, military type weapons, and semiautomatic handguns. It is common practice for these people to carry one or more rifles/shotguns/handguns in their vehicles at all times.

Gang Problems

The County of Los Angeles reports an annual average of over 365 gang-related murders per year. CHP officers are exposed to danger by the nature of their duties. The Department usually places within the top three law enforcement agencies in the State, in terms of total number of felony arrests made. This figure disguises an even more alarming picture, in that most weapons violations (e.g., carrying a concealed weapon, carrying a loaded weapon in public) have traditionally been punishable only as misdemeanors. Therefore, the likelihood of a CHP officer encountering an armed suspect in a metropolitan city is very high.

The chance of encountering an armed suspect, in possession of an instrument of superior firepower, is also increasing. The Firearms and Explosives Unit of the Los Angeles Police Department (LAPD) reports that approximately 40 percent of the firearms taken into custody by their personnel were semiautomatic or fully automatic weapons.

Violence Related To Intoxication

Alcohol and drugs amplify violent tendencies, remove inhibitions, cloud judgment and otherwise wreak havoc upon the sensibilities of human beings of all mental capacities. Members of the CHP have received worldwide renown for their commitment to removing impaired drivers from the roads. Comparatively speaking, the CHP accounts for 25-30 percent of the DUI arrests by all state police/highway patrols nationwide. All too frequently, these arrests become confrontational when the chemical of abuse overrides conscience. It has been determined by the Commission on Peace Officer Standards and Training (POST) that 46 percent of the suspects who killed peace officers in California (between January 1, 1980 and November 1, 1986) were under the influence of alcohol or drugs, or were mentally ill.

Officers Working Alone

There are 22 million vehicles and 18 million drivers in California. The majority of our uniformed employees work alone. There are 98 Area commands, including 33 Resident Posts which deploy 113 Traffic Officers and Sergeants. Typically, CHP personnel in Resident Posts are assigned to remote regions, where back-up is only rarely available. Generally, officers work alone in all Areas until 11:00 p.m. This deployment data is significant, because POST indicates that in 78 percent of the killings, and 58 percent of the assaults, the officers were assigned as one-person units. The standard police weapon (during the time span of the POST study) was a six-shot revolver. Without the benefit of a partner, officers are thereby placed in the situation of having to reload while monitoring the location(s) and actions of the suspect(s).

Proliferation of Weapons

The POST study further indicated that over 530 State and local peace officers were assaulted with firearms (during the seven year period) which could have resulted in their deaths. The data compares the officers' firepower to that of the suspects, by pointing out that a secondary weapon was immediately available to the assailants in 36 percent of the killings and 26 percent of the assaults. Approximately 80 percent of the killed or assaulted officers carried revolvers as their primary (and frequently only) firearm. The POST study stated, "overall, the firearms used by the suspects were of high quality."

Just as the drug trade has reached epidemic proportions, weapons smuggling is skyrocketing. The Bureau of Alcohol, Tobacco and Firearms (BATF) estimates that as many as 80,000 Chinese-made AK-47 semiautomatic rifles have been smuggled into the U.S. since 1986. BATF also indicates that seizures of illegal machine guns more than tripled in the three year period between 1982 and 1985. This accounts for only a dent in the total trade in illicit arms.

REASON WHY PROBLEM NOT BEING MET WITH CURRENT EQUIPMENT

California Highway Patrol personnel are currently equipped with a .38 caliber revolver, and may have access to a 12 gauge shotgun (which is mounted in a locked device within the patrol car). Personnel are authorized to purchase, with their own funds, a .357 magnum revolver (or another .38 caliber revolver) for on duty use in lieu of (or to supplement) the .38 caliber revolver. Although these revolvers are recognized to be generally capable of inflicting lethal wounds, the aforementioned environment demonstrates that the Department is outgunned by the criminal element. The following attributes establish why the Department must transition to semiautomatic pistols:

Occupational Safety

Most semiautomatic weapons feature decocking levers or safety devices, which may be activated by an officer immediately before it is taken away during a struggle. The FBI reports that officers have been killed with their own weapons (or by weapons of other officers whose guns were taken in a struggle) in 22 to 31 percent of the cases nationwide. One agency whose function parallels that of the CHP, the Illinois State Police, has been issuing semiautomatic pistols to its personnel for 22 years. During that time, no officers have been killed with their departmental handguns. 166 CHP officers have perished in the line of duty since 1929, 37 of whom died by gunfire. It has been estimated by the Public Employees Retirement System that it costs the State approximately $300,000 for each CHP officer's medical retirement and $800,000 per death.

Most semiautomatic weapons also allow the user to lower a cocked hammer without danger of an accidental discharge. LAPD conducted a two-year pilot test of semiautomatic pistols. The test group eventually encompassed 3,500 sworn personnel. The average annual rate of accidental firearms discharges, before the test, was 48. For the test group (approximately half the department), there were only two. Neither was caused by mechanical malfunction of the weapon.

Other safety features in many semiautomatic pistols include the ability to know if a round is in the chamber (by sight and feel), the ability to strike the same bullet (in the event of a misfire) several times, the ability to drop the weapon on the ground without it discharging, and the ability to disassemble the weapon (without tools) for rapid diagnosis of malfunction. The Los Angeles Sheriff Department reports that the traditional problems of seat belt entanglement (formerly experienced with revolvers) do not occur with semiautomatic pistols because of their smoother, flatter physical profile.

Durability

The U.S. Department of Defense has recently changed brands of semiautomatic pistols. Out of the first batch of 104,000 pistols, only four malfunctioned. The General Accounting Office (GAO) conducted an independent investigation into quality control. The GAO report (September 15, 1988) described random lot testing in which the integrity of the weapons was upheld (e.g., most failures occurred after 21,000 rounds were fired).

The Miami, Florida, Police Department reports that revolvers usually have a minimum maintenance-free life span of 2,500 rounds; in contrast, (semiautomatic) pistols enjoy an interval of 10,000 rounds. It is further recognized that pistol repair is facilitated by their modular construction; whereas revolvers have fewer replaceable parts, and are thereby discarded earlier. Pistol parts are interchangeable with one another; revolver parts must be individually fitted. Similarly, spare parts for pistols are cheaper than for revolvers.

Reloading

Revolvers are loaded by any of the three following methods:

- Insertion of individual bullets into the cylinder holes
- Use of a flexible strip, to load two bullets at a time into the cylinder
- Use of a mechanical loading device, to load all six bullets at a time into the cylinder by lowering the revolver, pointing the barrel to the ground to take advantage of gravity, opening the cylinder, jiggling the weapon to fit the bullets into the cylinder, pressing the release mechanism on the loading device, and closing the cylinder.

By comparison, a pistol is loaded by the following procedure:

- Insertion of a magazine into the bottom of the handle.
- Next, pull back the slide and release. For many pistols, even this step is unnecessary if the weapon has been previously fired and holds back the slide. A simple release button is utilized. The pistol is pointed at the suspect, if necessary, as there is no need to depend on gravity to reload.

Reloading is crucial in many enforcement situations. For example, New York Police Department (NYPD) reports that during 1985, officers were involved in 47 shootouts with armed suspects. Eight of the officers in those situations had to reload their six-shot revolvers. NYPD has since joined the groundswell within the police community, and is transitioning to semiautomatic pistols for all 35,000 of their personnel.

Firepower

Pistols carry nine to seventeen rounds. CHP officers' revolvers carry six. Ammunition pouches for pistols carry 16 to 34 rounds; revolver pouches carry 12 rounds. Pistols also shoot faster (while providing accuracy) than revolvers. One widely circulated training video features a police officer firing, reloading, and firing a pistol again in 1.5 seconds. This is particularly impressive, when considering that a revolver (in the hands of a similarly talented shooter) takes at least two and one-half times as long for the same task.

The National Institute of Law Enforcement and Criminal Justice (NILECJ), under the aegis of the U.S. Department of Justice, conducted an in-depth study in 1975, as mandated by Congress. One conclusion of the study was that, as more rounds were fired in combat from a revolver, accuracy decreased. Therefore, the performance of the revolver's bullet decreased because it was not striking the vital areas. Conversely, the pistol produces less noise, recoil and flash, and is therefore more capable of accurate rapid-firing. Other studies have reinforced these findings by pointing out that pistols are ergonomically superior to revolvers, such that pointing is easier (i.e., the sights are more "in line" with the contour of the forearm). The U.S. Drug Enforcement Administration has found that untrained students qualify easier with pistols than with revolvers.

Recognition

The law enforcement community is relegating revolvers, for the most part, to historical museums. Semiautomatic pistols are being adopted worldwide at an amazing rate. The CHP conducted a survey of 406 police and sheriff departments in this State, in 1988. It was discovered that 83 percent of the agencies, and 88 percent of the personnel, were authorized or required to

ANNEX A

FIRING RANGE
QUESTIONNAIRE

CALIFORNIA HIGHWAY PATROL

NINE MILLIMETER SEMIAUTOMATIC PISTOL
FIELD EVALUATION - FIRING RANGE QUESTIONNAIRE

INTRODUCTION: The Department is currently evaluating the characteristics of various models of 9mm pistols. One of the dimensions of data which is critical to the analysis is the performance of these weapons on the firing range.

The purpose of this questionnaire is to collect subjective information regarding the performance of each model of 9mm pistol on the firing range.

INSTRUCTIONS:

- This questionnaire shall be completed by all uniformed employees who participate in the field evaluation of 9mm pistols.
- Complete this questionnaire immediately after your initial qualification is accomplished, and after each monthly range session.
- Return this questionnaire immediately after completion to the designated Area Pistol Coordinator.
- Area Pistol Coordinators shall batch the original questionnaires and control sheets, and route them directly to Operational Planning Section no later than the tenth day after each range session. Coordinators shall also retain one copy of each completed questionnaire and control sheet in the Area.

PRINT IN UPPER CASE ONLY

LAST NAME: _____ FIRST NAME: _____ ID#: _____

LOCATION CODE: _____ DATE: _____ RIGHT OR LEFT HANDED: _____ SEX: _____

TEST WEAPON BRAND: _____ MODEL: _____ SERIAL NUMBER: _____

OF ROUNDS FIRED: _____ # OF ROUNDS MISFIRED: _____ # OF JAMS: _____

---

(1) I have had previous experience shooting the following semiautomatic pistols, on or off duty (or in the military):

_____

(2) I have qualified with the following revolver(s) while working as a peace officer:

_____

(Continued on next page)

INSTRUCTIONS (CONTINUED)

- Only one answer shall be selected for each statement.
- Select an answer for each statement by circling the number in the answer column that best describes your opinion.

			ANSWERS
(3)	Weapon Feel	1 - Very Heavy 2 - Heavy 3 - Acceptable 4 - Light 5 - Very Light	(3) 1 2 3 4 5
(4)	Magazine Insertion Effort (Slide Locked Open)	1 - Very Difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(4) 1 2 3 4 5
(5)	Magazine Insertion Effort (Slide Locked Closed)	1 - Very Difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(5) 1 2 3 4 5
(6)	Magazine Release Placement	1 - Very Inconvenient 2 - Inconvenient 3 - Moderate 4 - Convenient 5 - Very Convenient	(6) 1 2 3 4 5
(7)	Magazine Release Effort	1 - Very difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(7) 1 2 3 4 5
(8)	Slide Release Placement	1 - Very Inconvenient 2 - Inconvenient 3 - Moderate 4 - Convenient 5 - Very Convenient	(8) 1 2 3 4 5

(Continued on next page)

FIRING RANGE QUESTIONNAIRE

			ANSWERS	
(9)	Slide Release Effort	1 - Very Difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(9)	1 2 3 4 5
(10)	Slide Operation Effort, Manual	1 - Very Difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(10)	1 2 3 4 5
(11)	Decocking Lever Placement	1 - Very Awkward 2 - Awkward 3 - Moderate 4 - Convenient 5 - Very Convenient	(11)	1 2 3 4 5
(12)	Decocking Lever Effort	1 - Very Difficult 2 - Difficult 3 - Moderate 4 - Easy 5 - Very Easy	(12)	1 2 3 4 5
(13)	Safety Placement (If Applicable)	1 - Very Inconvenient 2 - Inconvenient 3 - Moderate 4 - Convenient 5 - Very Convenient	(13)	1 2 3 4 5
(14)	Safety Effort (If Applicable)	1 - Very Inconvenient 2 - Inconvenient 3 - Moderate 4 - Easy 5 - Very Easy	(14)	1 2 3 4 5
(15)	Sight Pickup	1 - Very Inconvenient 2 - Inconvenient 3 - Moderate 4 - Convenient 5 - Very Convenient	(15)	1 2 3 4 5

(Continued on next page)

FIRING RANGE QUESTIONNAIRE

			ANSWERS
(16)	Accuracy	1 - Very Poor 2 - Poor 3 - Acceptable 4 - Accurate 5 - Very Accurate	(16) 1 2 3 4 5
(17)	Sight Characteristics	1 - Fixed 2 - Adjustable	(17) 1 2
(18)	Double Action Trigger Pull, Finger Placement	1 - Very Awkward 2 - Awkward 3 - Moderate 4 - Convenient 5 - Very Convenient	(18) 1 2 3 4 5
(19)	Double Action Trigger Pull, Effort	1 - Very Heavy 2 - Heavy 3 - Acceptable 4 - Light 5 - Very Light	(19) 1 2 3 4 5
(20)	Single Action Trigger Pull (If Applicable), Finger Placement	1 - Very Awkward 2 - Awkward 3 - Moderate 4 - Convenient 5 - Very Convenient	(20) 1 2 3 4 5
(21)	Single Action Trigger Pull (If Applicable), Effort	1 - Very Heavy 2 - Heavy 3 - Acceptable 4 - Light 5 - Very Light	(21) 1 2 3 4 5
(22)	Recoil	1 - Very Heavy 2 - Heavy 3 - Acceptable 4 - Light 5 - Very Light	(22) 1 2 3 4 5

(Continued on next page)

ANNEX B

ON-DUTY CARRY
QUESTIONNAIRE

CALIFORNIA HIGHWAY PATROL

NINE MILLIMETER SEMIAUTOMATIC PISTOL
FIELD EVALUATION - ON-DUTY CARRY QUESTIONNAIRE

INTRODUCTION: In order to more fully evaluate the test pistol you have been carrying, this questionnaire addresses those overall characteristics of the weapon which cannot be ascertained at the shooting range.

INSTRUCTIONS:

- This questionnaire shall be completed by all employees who participate in the field evaluation of 9mm pistols.
- Complete a copy of this questionnaire immediately before returning each test pistol.
- Return this questionnaire immediately after completion to the designated Area/Division Pistol Coordinator.
- Area/Division Pistol Coordinators shall batch the original questionnaires and control sheets, and route them directly to Operational Planning Section no later than the tenth day after each non-initial range session. Coordinators shall also retain one copy of each completed questionnaire and control sheet in the Area.

PRINT IN UPPER CASE ONLY

LAST NAME: _____ FIRST NAME: _____ ID#: _____

LOCATION CODE: _____ DATE: _____ RIGHT OR LEFT HANDED: _____ SEX: _____

TEST WEAPON BRAND: _____ MODEL: _____ SERIAL NUMBER: _____

		ANSWERS
(1) Since qualifying, you have carried this weapon the following number of shifts in uniform.	1 - 36 or More Shifts 2 - 26 to 35 Shifts 3 - 16 to 25 Shifts 4 - 6 to 15 Shifts 5 - 5 or Less Shifts	(1) 1 2 3 4 5

Holster Brand: _____ Model: _____

ON-DUTY CARRY QUESTIONNAIRE

			ANSWERS
(2)	Since qualifying, you have carried this weapon the following number of shifts <u>on duty, out of uniform</u>.	1 - 36 or More Shifts 2 - 26 to 35 Shift 3 - 16 to 25 Shifts 4 - 6 to 15 Shifts 5 - 5 or Less Shifts	(2) 1 2 3 4 5

Holster Brand (If Applicable): _____ Model: _____

(3)	Since qualifying, you have fired this weapon at a firing range on the following number of occasions.	1 - Four or More Times 2 - Three Times 3 - Twice 4 - Once 5 - None	(3) 1 2 3 4 5
(4)	Number of enforcement stops in which you unholstered the weapon.	1 - 7 or More times 2 - 5 to 6 Times 3 - 3 to 4 Times 4 - 1 to 2 Times 5 - None	(4) 1 2 3 4 5
(5)	Ease of unholstering at <u>any</u> time.	1 - Very Easy 2 - Easy 3 - Moderate 4 - Difficult 5 - Very Difficult	(5) 1 2 3 4 5
(6)	Ease of reholstering, at <u>any</u> time.	1 - Very Easy 2 - Easy 3 - Moderate 4 - Difficult 5 - Very Difficult	(6) 1 2 3 4 5
(7)	Unsolicited comments from peace officers of allied agencies.	1 - Very Favorable 2 - Favorable 3 - Neutral or None 4 - Unfavorable 5 - Very Unfavorable	(7) 1 2 3 4 5
(8)	Unsolicited comments from other citizens (over age 18).	1 - Very Favorable 2 - Favorable 3 - Neutral or None 4 - Unfavorable 5 - Very Unfavorable	(8) 1 2 3 4 5

(Continued on next page)

ON-DUTY CARRY QUESTIONNAIRE

			ANSWERS					
(9)	Carrying comfort, standing.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(9)	1	2	3	4	5
(10)	Carrying comfort, walking.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(10)	1	2	3	4	5
(11)	Carrying comfort, sitting in vehicle.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(11)	1	2	3	4	5
(12)	Carrying comfort, sitting in chairs.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(12)	1	2	3	4	5
(13)	Carrying comfort of magazine pouch (under all conditions).	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(13)	1	2	3	4	5
(14)	Accessibility (placement) of magazine pouch (under all conditions).	1 - Very Convenient 2 - Convenient 3 - Moderate 4 - Inconvenient 5 - Very Inconvenient	(14)	1	2	3	4	5
(15)	Weapon accidentally coming out of holster.	1 - Not At All 2 - 1 to 2 Times 3 - 3 to 4 Times 4 - 5 to 6 Times 5 - 7 or More Times	(15)	1	2	3	4	5

(Continued on next page)

ON-DUTY CARRY QUESTIONNAIRE

			ANSWERS
(16)	Weapon holster accidentally coming unsnapped.	1 - Not At All 2 - 1 to 2 Times 3 - 3 to 4 Times 4 - 5 to 6 Times 5 - 7 or More Times	(16) 1 2 3 4 5
(17)	Magazine accidentally released from weapon.	1 - Not At All 2 - 1 to 2 Times 3 - 3 to 4 Times 4 - 5 to 6 Times 5 - 7 or More Times	(17) 1 2 3 4 5
(18)	Magazine accidentally falling from pouch.	1 - Not At All 1 - 1 to 2 Times 3 - 3 to 4 Times 4 - 5 to 6 Times 5 - 7 or More Times	(18) 1 2 3 4 5
(19)	Based on your on-duty experiences with the weapon, how would you rate it for off-duty carry based on weight.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(19) 1 2 3 4 5
(20)	Same as #19, based on physical dimensions.	1 - Very Comfortable 2 - Comfortable 3 - Acceptable 4 - Uncomfortable 5 - Very Uncomfortable	(20) 1 2 3 4 5

Additional Comments: _____

_____

_____

_____

_____

_____

(Attach additional pages as necessary)

ANNEX C

WEAPONS COMPARISON
QUESTIONNAIRE

CALIFORNIA HIGHWAY PATROL

9MM SEMIAUTOMATIC PISTOL FIELD EVALUATION

WEAPONS COMPARISON QUESTIONNAIRE

INTRODUCTION: This questionnaire will assist the Department in selecting the most appropriate 9mm pistol(s) for use by CHP officers. To facilitate your recollection of each weapon's characteristics, you are requested to review your responses to the "Firing Range" and "On-Duty" questionnaires.

INSTRUCTIONS:

All employees who participate in the field evaluation of 9mm pistols shall complete this questionnaire.

If you were absent during the evaluation period of any of the test weapons, leave the particular space blank in the heading.

Respondents shall return the questionnaire to the designated Area/Division Pistol Coordinator immediately after completion.

Area/Division Pistol Coordinators shall batch the original questionnaires and route them directly to Operational Planning Section no later than the tenth day after the resondents have completed the forms. Coordinators shall also retain one copy of each completed questionnaire.

Utilize the following sequential codes for weapons comparisons:

AREA COMMAND

A) S & W 659
B) SIG P226
C) GLOCK 17
D) H-K P7M13
E) BERETTA 92F

PLAIN CLOTHES

A) S & W 439
B) SIG P225
C) GLOCK 19
D) H-K P7M8
E) BERETTA 92F COMPACT

Enter the appropriate weapon models IN THE REQUIRED ORDER across the top of response columns, as illustrated below. After you have filled in the "model lines" in the heading area, rank each model in order of preference (1 through 5) for each performance factor. A ranking of "1" is the highest possible ranking and indicates that you believe the weapon is the most suitable of all models tested for the specified performance factor. Your answers should be recorded in the manner illustrated below:

	EXAMPLE	S & W 659	SIG P226	GLOCK 17	H/K P7M13	BER/ 92F
		A	B	C	D	E
(1)	Ease of shooting with wet hands	2	3	1	5	4
(2)	Resistance to corrosion	4	1	5	3	2

(OR)

S & W 439	SIG P225	GLOCK 19	H/K P7M8	BER/ COMP
A	B	C	D	E
2	3	1	5	4
4	1	5	3	2

PRINT IN UPPER CASE ONLY

LAST NAME: _____ FIRST NAME: _____ ID#: _____

LOCATION CODE: _____ DATE: _____ RIGHT OR LEFT HANDED: _____ SEX: _____

TEST GROUP (AREA COMMAND OR PLAIN CLOTHES): _____

WEAPONS COMPARISON QUESTIONNAIRE - FIRING RANGE

REMINDER : FIRST ENTER THE WEAPON MODELS (IN THE PROPER ORDER) INTO THE HEADING SQUARES.

	A	B	C	D	E
(1) Weapon Weight					
(2) Magazine Insertion (Slide Locked Open)					
(3) Magazine Insertion (Slide Locked Closed)					
(4) Magazine Release Placement					
(5) Magazine Release Effort					
(6) Slide Release Placement					
(7) Slide Release Effort					
(8) Slide Operation Effort (Manually)					
(9) Decocking Lever Placement					
(10) Decocking Lever Effort					
(11) Safety Placement (If applicable)					
(12) Safety Effort (If applicable)					
(13) Sight Pickup					

	A	B	C	D	E
(14) Accuracy					
(15) Double Action Trigger Pull, Finger Placement					
(16) Double Action Trigger Pull, Effort					
(17) Single Action Trigger Pull, (If Applicable), Finger Placement					
(18) Single Action Trigger Pull, (If Applicable), Effort					
(19) Recoil Reduction					
(20) Recovery Time					
(21) One Hand Un-supported Shooting					
(22) Muzzle Flash Reduction					
(23) Grip Finish					
(24) Disassembly					
(25) Reassembly					
(26) Best Weapon Over-All					

WEAPONS COMPARISON QUESTIONNAIRE - ON-DUTY CARRY

REMINDER : FIRST ENTER THE WEAPON MODELS (IN THE PROPER ORDER) INTO THE HEADING SQUARES.

	A	B	C	D	E		A	B	C	D	E
(1) Ease of Unholstering											
(2) Ease of Reholstering											
(3) Carrying Comfort, Standing											
(4) Carrying Comfort, Sitting in Vehicle											
(5) Carrying Comfort Sitting In Chairs											
(6) Carrying Comfort of Magazine Pouch											
(7) Accessibility Placement of Magazine Pouch											
(8) Security of Magazine In Weapon											
(9) Security of Weapon In Holster											
(10) Security of Magazine In Pouch											
(11) Suitability for Off-Duty Carry											

ANNEX D

QUESTIONNAIRE
RATING SYSTEM

QUESTIONNAIRE RATING SYSTEM

There were three sets of questionnaires utilized within the study. The larger group of test subjects (i.e., those who did not rotate the weapons among themselves) utilized the Firing Range Questionnaire and the On-Duty Carry Questionnaire. The smaller group of test subjects (i.e., instructors) rotated weapons among themselves for a more proficient level of familiarity with each weapon system. The instructors utilized the elements from both of the aforementioned questionnaires to formulate their responses within a bifurcated survey tool known as the Weapons Comparison Questionanaire.

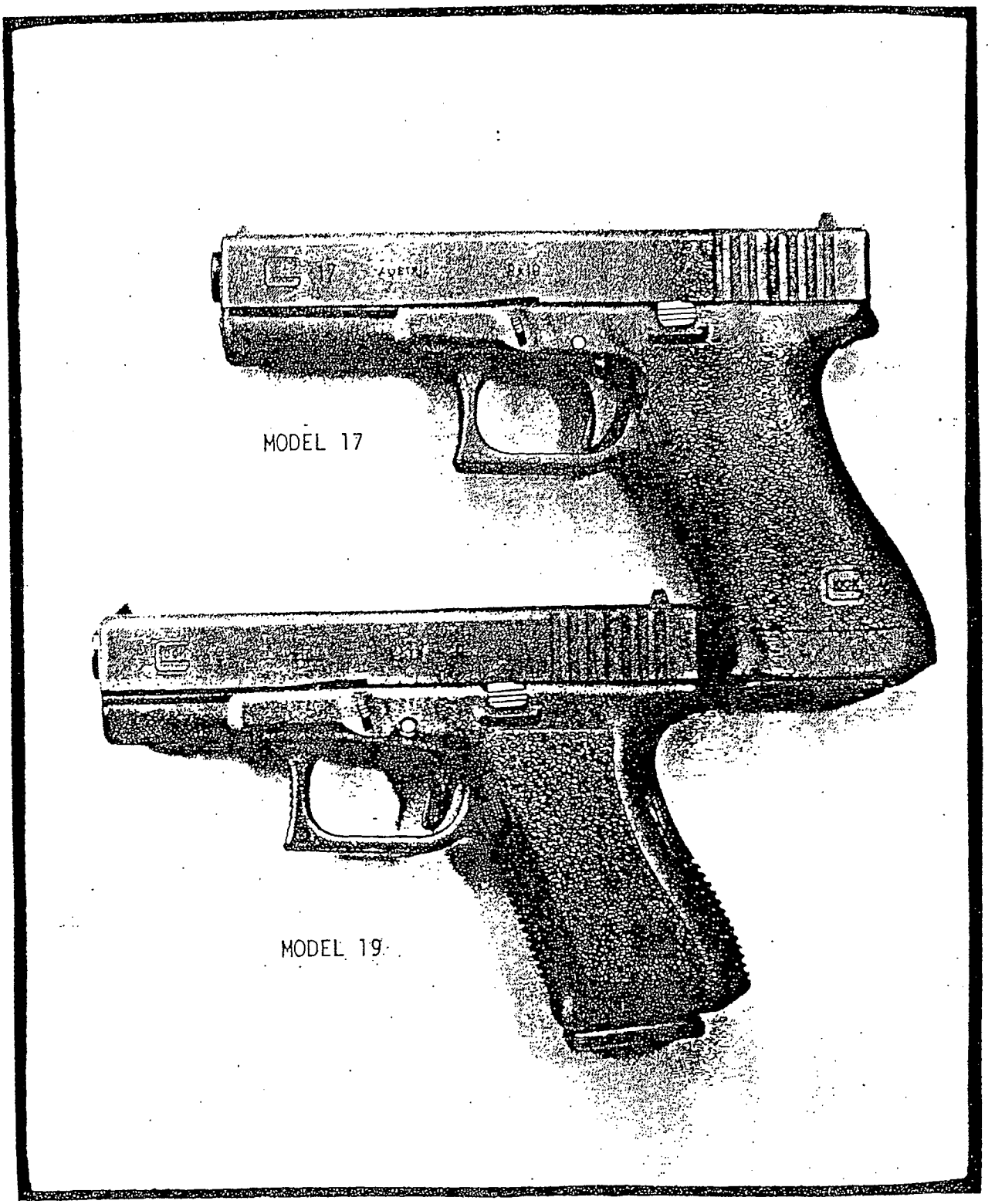
Likert Scale responses, featuring varying-direction ratings of one through five, were utilized on all questionnaires. The individual questionnaire scores were conglomerated into average scores by means of Control Sheets. Control Sheet averaging was done by Area/Division Pistol Coordinators. Control Sheet averges for each of the ten pistols were transposed onto Master Tally Logs for overall averages. The master tallying was done by the Research Analyst in Operational Planning Section. Master tally averages were converted to "20 to 100 point scale ratings" by the Evaluation Officer by means of linear scale nomographs as indicated in Annex I.

ANNEX E

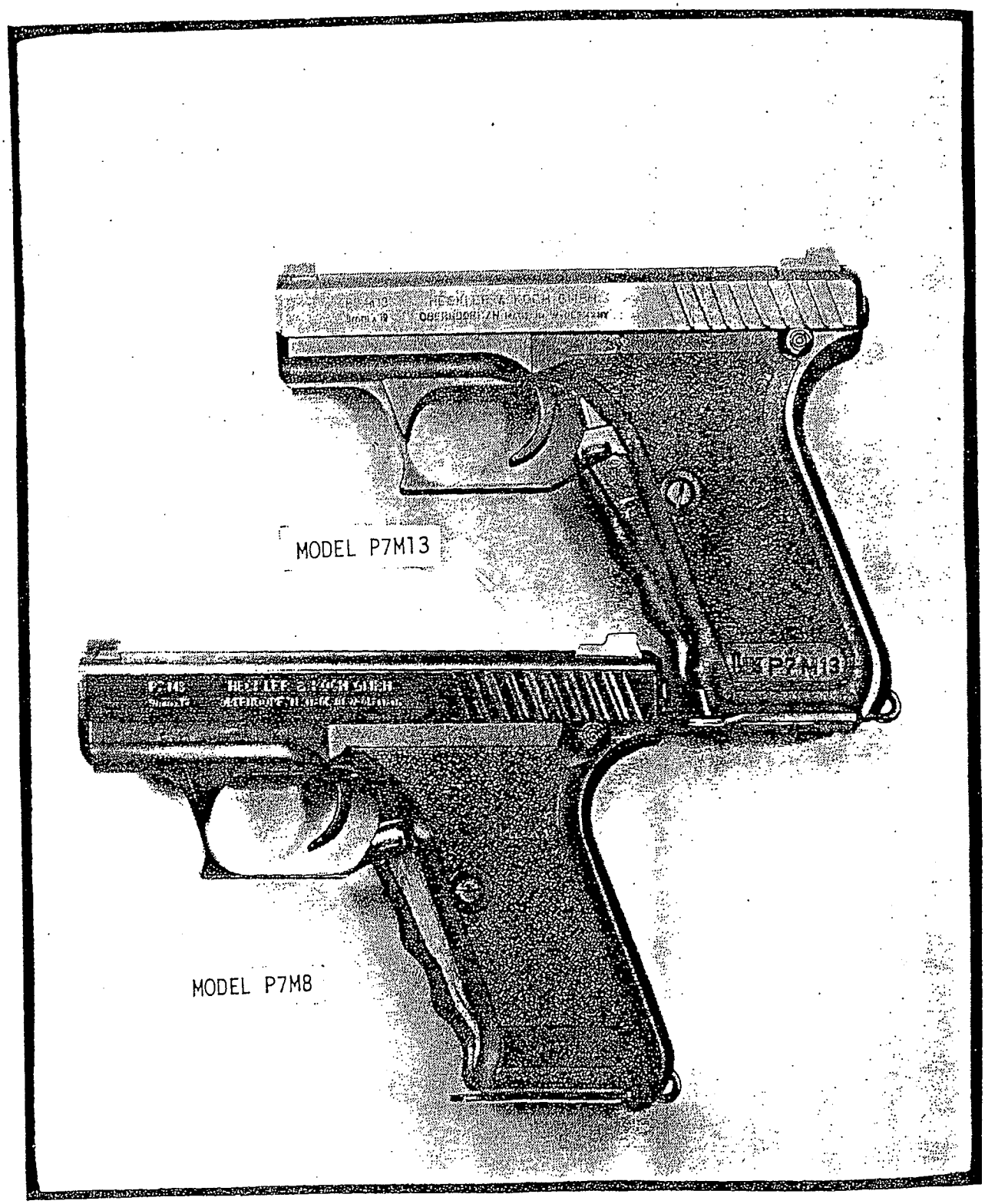
PHOTOGRAPHS OF
TEST WEAPONS

BERETTA PISTOLS

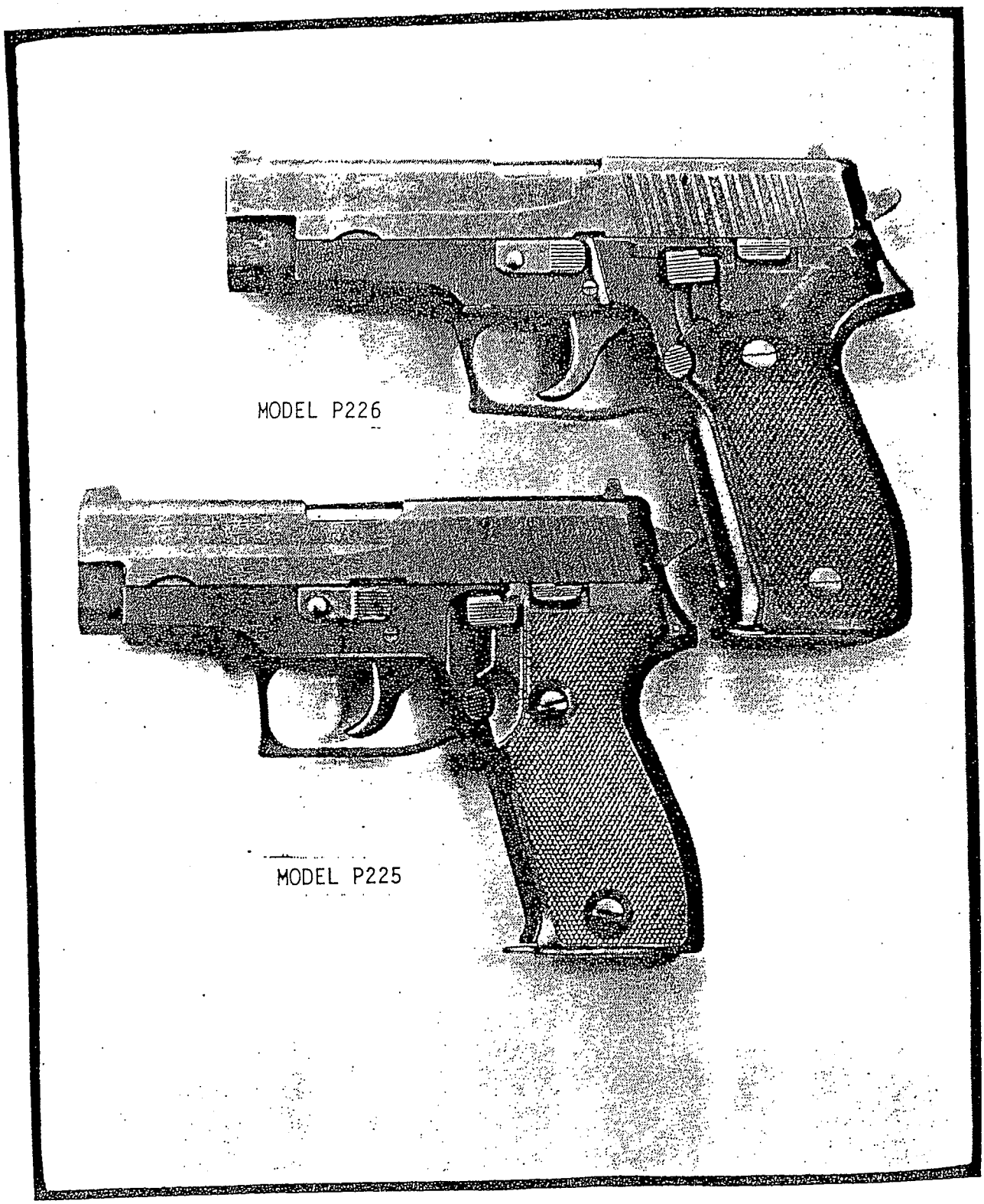
GLOCK PISTOLS



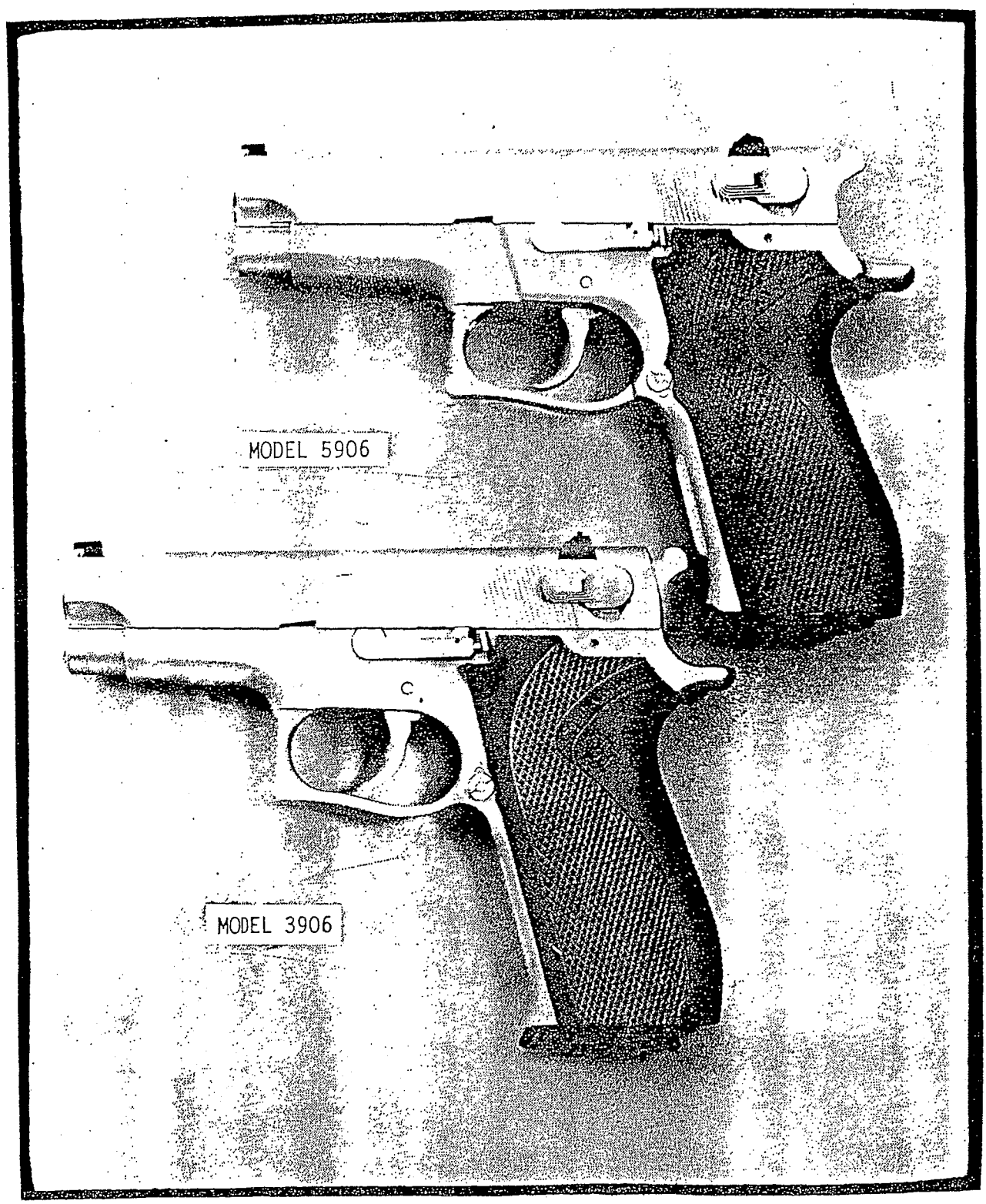
HECKLER-KOCH PISTOLS



SIG-SAUER PISTOLS



SMITH & WESSON PISTOLS



ANNEX F

SPECIAL FEATURES
OF TEST WEAPONS

SPECIAL FEATURES

	Unloaded Weight	Overall Length	Barrel Length	Finish	Action	Magazine	Trigger Pull	Muzzle Velocity*	Muzzle Energy*	Illustrated on Page
Beretta Model 92F	2.10 lbs	8.54 in.	4.92 in.	Blue	Recoil operated	15 round staggered box	Dbl. action 8-16 lbs Sgl. action 4-6 lbs	Approx. 1300 FPS	Approx. 400 ft. lbs.	E-1
Beretta Model 92FC	2.4 lbs	7.88 in.	4.25 in.	Blue	*	13 round staggered box	Same as 92F	*	*	E-1
Glock 17	1.36 lbs	7.38 in.	4.44 in.	Blue	*	17 round staggered box	5-8 lbs	*	*	E-2
Glock 19	1.10 lbs	6.88 in.	3.88 in.	Blue	*	15 round staggered box	Same as Model 17	*	*	E-2
H&K Model P7M13	1.87 lbs	6.9 in.	4.13 in.	Blue	* **	13 round staggered box	4-5 lbs	*	*	E-3
H&K Model P7M8	1.75 lbs	6.73 in.	4.13 in.	Blue	* **	8 round in line box	Same as Model P7M13	*	*	E-3
Sig Sauer Model 226	1.86 lbs	7.71 in.	4.41 in.	Blue	*	15 round staggered box	Dbl. action 12 lbs Sgl. action 4 lbs	*	*	E-4
Sig Sauer Model 225	1.80 lbs	7.08 in.	3.86 in.	Blue	*	8 round in line box	Same as Model 226	*	*	E-4
S&W Model 5906	2.45 lbs	7.63 in.	4 in.	Stainless	*	14 round staggered box	Dbl. action 12-14 lbs Sgl. action 4-7 lbs	*	*	E-5
S&W Model 3906	1.75 lbs	7.63 in.	4 in.	Stainless	*	8 round in line box	Same as Model 5906	*	*	E-5

* Bullet: 115 grain, Jacketed Hollow Point

** Gas Retarded Recoil Operation

ANNEX G

FIRING RANGE QUESTIONNAIRE
CONTROL SHEETS

CALIFORNIA HIGHWAY PATROL

NINE MILLIMETER SEMIAUTOMATIC PISTOL
FIELD EVALUATION - FIRING RANGE CONTROL SHEET

INTRODUCTION:

In order to analyze the responses of the evaluation subjects, it is incumbent that the Area/Division Pistol Coordinators sort and compile the questionnaires.

The purpose of this control sheet is to facilitate the data analysis for the final report.

INSTRUCTIONS:

- Do not combine totals from different models of pistols. Submit a control sheet for each model.
- The control sheets must be completed after each set of questionnaires is completed by the test subjects.
- Batch and submit control sheets, with questionnaires, directly to Operational Planning Section, no later than the tenth day after each range session. Retain one copy of each questionnaire and control sheet in the Area.
- If narrative comment is necessary for any critical category, utilize the "comments" space below each tally line. Attach extra pages if necessary.

COMMAND NAME: _____ AREA CODE: _____

PISTOL COORDINATOR NAME: _____ ID# _____

RANGE PHASE (Initial or requalifying): _____

PISTOL BRAND: _____ MODEL: _____

_____

(Continued on next page)

FIRING RANGE CONTROL SHEET

INTRODUCTORY RESPONSES

(A) # of Test Subjects:_____

(B) # of Total Rounds Fired:_____

(C) # of Total Misfires: _____

Comments: _____

(D) # of Total Jams:_____

Comments: _____

RANGE EVALUATIONS

(3) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments _ _____

(4) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(5) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(6) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(7) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(8) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

9) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(10) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(Continued on next page)

FIRING RANGE CONTROL SHEET

11) Total Score:_____ + # of Respondents:_____ = Average Score: _____

Comments: _____

12) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

13) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

14) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

15) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

16) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

17) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

18) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

19) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

20) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

21) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

22) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(Continued on next page)

FIRING RANGE CONTROL SHEET

(23) Total Score:_____ + # of Respondents:_____ = Average Score: _____

Comments: _____

(24) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(25) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(26) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(27) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(28) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

ANNEX H

ON-DUTY CARRY QUESTIONNNAIRE
CONTROL SHEETS

CALIFORNIA HIGHWAY PATROL

NINE MILLIMETER SEMIAUTOMATIC PISTOL
FIELD EVALUATION - ON-DUTY CARRY CONTROL SHEET

INTRODUCTION:

In order to analyze the responses of the evaluation subjects, it is incumbent that the Area/Division Pistol Coordinators sort and compile the questionnaires.

The purpose of this control sheet is to facilitate the data analysis for the final report.

INSTRUCTIONS:

- Do not combine totals from different models of pistols. Submit a control sheet for each model.
- The control sheets must be completed after each set of questionnaires is completed by the test subjects.
- Batch and submit control sheets, with questionnaires, directly to Operational Planning Section, no later than the tenth day after each non-initial range session. Retain one copy of each questionnaire and control sheet in the Area.
- If narrative comment is necessary for any critical category, utilize the "comments" space below each tally line. Attach extra pages if necessary.

COMMAND NAME:_____ AREA CODE:_____

PISTOL COORDINATOR NAME: _____ ID# _____

PISTOL BRAND:_____ MODEL:_____

HOLSTER BRAND:_____ MODEL:_____

COMMENTS ON HOLSTERS (If any):_____

_____

_____

ON-DUTY CARRY CONTROL SHEET

COMMAND NAME: _____ AREA CODE: _____

PISTOL COORDINATOR NAME: _____ ID# _____

PISTOL BRAND: _____ MODEL: _____

HOLSTER BRAND: _____ MODEL: _____

COMMENTS ON HOLSTERS (If any): _____

_____

_____

RESPONSES

(1) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(2) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(3) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(4) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(5) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(6) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(7) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(8) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(9) Total Score: _____ + # of Respondents: _____ = Average Score: _____

Comments: _____

(Continued on next page)

ON-DUTY CARRY CONTROL SHEET

(10) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(11) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(12) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(13) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(14) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(15) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(16) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(17) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(18) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(19) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

(20) Total Score:_____ + # of Respondents:_____ = Average Score:_____

Comments: _____

ANNEX I

CONVERSION NOMOGRAPH

CONVERSION NOMOGRAPH

FIRING RANGE AVERAGE	ON-DUTY CARRY AVERAGE	COMPARISON FIRING RANGE POINTS	COMPARISON ON-DUTY CARRY POINTS	RATING SCORE
5.0	1.0	50	10	100
4.9	1.1	49	11	98
4.8	1.2	48	12	96
4.7	1.3	47	13	94
4.6	1.4	46	14	92
4.5	1.5	45	15	90
4.4	1.6	44	16	88
4.3	1.7	43	17	86
4.2	1.8	42	18	84
4.1	1.9	41	19	82
4.0	2.0	40	20	80
3.9	2.1	39	21	78
3.8	2.2	38	22	76
3.7	2.3	37	23	74
3.6	2.4	36	24	72
3.5	2.5	35	25	70
3.4	2.6	34	26	68
3.3	2.7	33	27	66
3.2	2.8	32	28	64
3.1	2.9	31	29	62
3.0	3.0	30	30	60
2.9	3.1	29	31	58
2.8	3.2	28	32	56
2.7	3.3	27	33	54
2.6	3.4	26	34	52
2.5	3.5	25	35	50
2.4	3.6	24	36	48
2.3	3.7	23	37	46
2.2	3.8	22	38	44
2.1	3.9	21	39	42
2.0	4.0	20	40	40
1.9	4.1	19	41	38
1.8	4.2	18	42	36
1.7	4.3	17	43	34
1.6	4.4	16	44	32
1.5	4.5	15	45	30
1.4	4.6	14	46	28
1.3	4.7	13	47	26
1.2	4.8	12	48	24
1.1	4.9	11	49	22
1.0	5.0	10	50	20

ANNEX J

SURVEY RESPONSES

SURVEY RESPONSES

BACKGROUND

Two sets of test subjects provided evaluations of the different pistols through two types of questionnaires (Firing Range and On-Duty Carry). The larger group of test subjects (not more than 153 employees at a time) generally carried only one type of pistol during the course of the study. All employees did, however, receive basic familiarization training with each of the five brands of pistols (in the interest of officer safety). This group of test subjects did not fill out the Weapons Comparison Questionnaires (described below).

The smaller test group (18 instructors) were required to rotate the pistols among themselves, provide ratings which compared the weapons to each other, and record the comparative ratings by means of the Weapons Comparison Questionnaire (which is divided into two portions -- Firing Range and On-Duty Carry). The instructors were directed to base their ratings on their own experiences, as well as on their observations of the experiences of the employees to whom they provided instruction.

The numerical responses from the questionnaires were converted to the rating scale which is described by the nomograph in Annex I. The maximum attainable score is 100; the minimum is 20. The ratings are listed first by highest score (i.e., highest rated pistols are listed on the top line of each table). Ties are listed alphabetically by brand name. Features which are not applicable are listed at the bottom of each table as "N/A," and are not considered as negative rating factors. This is especially evident in questions where definitions defy colloquial terminologies (e.g., "safety mechanisms" are considered to be mainly decocking levers for the three brands of pistols which have external hammers). The greatest disparity in the utilization of "N/A" ratings, in fact, related to different interpretations of the definitions of "safeties" and types of trigger pull. The following abbreviations are utilized in the recap tables.

Ber 92 =	Beretta 92F	Ber 92FC =	Beretta 92F Compact
HK M8 =	Heckler-Koch P7M8	HK M13 =	Heckler-Koch P7M13
Sig 225 =	Sig-Sauer P225	Sig 226 =	Sig-Sauer P226
S&W =	Smith & Wesson (for both models)		

FIRING RANGE QUESTIONNAIRES

(3) Weapon Feel (highest rating = least heavy)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	92	HK M13	88	Glock 19	78	Glock 17	82
HK M8	82	Glock 17	82	HK M8	76	Sig 226	68
Sig 225	78	Sig 226	80	Ber 92FC	66	Ber 92	62
S & W 3906	66	Ber 92	44	Sig 225	66	HK M13	62
Ber 92FC	54	S & W 5906	42	S & W 3906	60	S & W 5906	60

(4) Magazine Insertion Effort, Slide Locked Open (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
S & W 3906	86	HK M13	86	HK M8	88	HK M13	92
HK M8	84	Sig 226	86	Ber 92FC	84	Sig 226	90
Glock 19	68	Ber 92	56	S & W 3906	84	Ber 92	88
Ber 92FC	66	Glock 17	52	Glock 19	80	Glock 17	86
Sig 225	64	S & W 5906	46	Sig 225	80	S & W 5906	84

(5) Magazine Insertion Effort, Slide Locked Closed (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
S & W 3906	86	HK M13	84	HK M8	90	HK M13	94
HK M8	84	Sig 226	78	Ber 92FC	84	Sig 226	88
Glock 19	68	Glock 17	62	Glock 19	84	Ber 92	86
Ber 92FC	66	Ber 92	54	S & W 3906	84	Glock 17	86
Sig 225	64	S & W 5906	48	Sig 225	78	S & W 5906	84

(6) Magazine Release Placement (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	90	HK M8	88	HK M13	88
S & W 3906	82	Sig 226	76	Ber 92FC	82	Sig 226	88
Glock 19	66	Ber 92	58	S & W 3906	78	Ber 92	80
Sig 225	66	S & W 5906	54	Glock 19	72	S & W 5906	80
Ber 92FC	62	Glock 17	42	Sig 225	68	Glock 17	78

(7) Magazine Release Effort (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
S & W 3906	88	HK M13	90	HK M8	92	HK M13	90
HK M8	80	Sig 226	76	Ber 92FC	82	Sig 226	88
Sig 225	74	Ber 92	58	Sig 225	80	Ber 92	84
Ber 92FC	68	S & W 5906	52	S & W 3906	80	S & W 5906	78
Glock 19	56	Glock 17	34	Glock 19	68	Glock 17	68

(8) Slide Release Placement (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	94	HK M13	88	HK M8	92	HK M13	98
Sig 225	74	Sig 226	78	Ber 92FC	84	Glock 17	84
Glock 19	70	Ber 92	58	Sig 225	82	Sig 226	82
S & W 3906	66	Glock 17	54	Glock 19	78	Ber 92	78
Ber 92FC	62	S & W 5906	50	S & W 3906	70	S & W 5906	72

(9) Slide Release Effort (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	88	HK M8	92	HK M13	94
Sig 225	70	Sig 226	80	Sig 225	82	Glock 17	86
Glock 19	68	Ber 92	58	Ber 92FC	80	Ber 92	84
S & W 3906	68	Glock 17	52	Glock 19	72	Sig 226	82
Ber 92FC	66	S & W 5906	44	S & W 3906	72	S & W 5906	70

(10) Slide Operation Effort, Manual (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	90	Sig 226	82	Glock 19	82	Glock 17	84
S & W 3906	82	HK M13	78	HK M8	82	Sig 226	82
Ber 92FC	68	Ber 92	68	Ber 92FC	78	Ber 92	80
Sig 225	66	Glock 17	58	Sig 225	78	HK M13	78
Glock 19	64	S & W 5906	40	S & W 3906	76	S & W 5906	72

(11) Decocking Lever Placement (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Sig 225	88	Sig 226	82	HK M8	92	HK M13	94
S & W 3906	78	Ber 92	56	S & W 3906	84	Sig 226	86
Ber 92FC	70	S & W 5906	52	Ber 92FC	82	S & W 5906	78
Glock 19	N/A	Glock 17	N/A	Sig 225	82	Ber 92	76
HK M8	N/A	HK M13	N/A	Glock 19	N/A	Glock 17	N/A

(12) Decocking Lever Effort (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Sig 225	90	Sig 226	78	HK M8	90	HK M13	94
Ber 92FC	72	Ber 92	60	Sig 225	86	Sig 226	88
S & W 3906	66	S & W 5906	48	Ber 92FC	80	S & W 5906	78
Glock 19	N/A	Glock 17	N/A	S & W 3906	80	Ber 92	76
HK M8	N/A	HK M13	N/A	Glock 19	N/A	Glock 17	N/A

(13) Safety Placement, If Applicable (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Ber 92FC	N/A	Ber 92	N/A	Ber 92FC	82	Ber 92	96
Glock 19	N/A	Glock 17	N/A	HK M8	82	HK M13	90
HK M8	N/A	HK M13	N/A	Glock 19	66	Glock 17	88
Sig 225	N/A	Sig 226	N/A	S & W 3906	60	S & W 5906	64
S & W 3906	N/A	S & W 5906	N/A	Sig 225	N/A	Sig 226	N/A

(14) Safety Effort, If Applicable (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Ber 92FC	N/A	Ber 92	N/A	Ber 92FC	80	HK M13	90
Glock 19	N/A	Glock 17	N/A	HK M8	80	Glock 17	88
HK M8	N/A	HK M13	N/A	Glock 19	66	Ber 92	76
Sig 225	N/A	Sig 226	N/A	S & W 3906	62	S & W 5906	72
S & W 3906	N/A	S & W 5906	N/A	Sig 225	N/A	Sig 226	N/A

(15) Sight Pickup (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	90	HK M13	94	HK M8	94	HK M13	94
Glock 19	84	Sig 226	68	S & W 3906	88	Glock 17	86
S & W 3906	82	Glock 17	64	Glock 19	82	Sig 226	84
Sig 225	58	S & W 5906	56	Ber 92FC	76	S & W 5906	84
Ber 92FC	54	Ber 92	50	Sig 225	74	Ber 92	74

(16) Accuracy (highest rating = most accurate)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	98	HK M8	96	HK M13	96
Glock 19	74	Sig 226	80	Glock 19	88	Sig 226	92
S & W 3906	72	Glock 17	48	S & W 3906	86	Glock 17	88
Ber 92FC	66	S & W 5906	48	Ber 92FC	82	S & W 5906	86
Sig 225	66	Ber 92	46	Sig 225	80	Ber 92	84

(17) Sight Characteristics (All sights were fixed)

(18) Double Action Trigger Pull, Finger Placement (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	88	Glock 17	62	Glock 19	84	Glock 17	86
S & W 3906	82	Sig 226	62	S & W 3906	80	Ber 92	80
Sig 225	78	Ber 92	50	Ber 92FC	78	Sig 226	80
Ber 92FC	64	S & W 5906	50	Sig 225	74	S & W 5906	78
HK M8	N/A	HK M13	N/A	HK M8	N/A	HK M13	N/A

(19) Double Action Trigger Pull, Effort (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	86	Sig 226	84	Glock 19	76	Glock 17	80
S & W 3906	84	Glock 17	74	S & W 3906	74	Ber 92	72
Sig 225	74	Ber 92	58	Ber 92FC	68	Sig 226	70
Ber 92FC	70	S & W 5906	44	Sig 225	64	S & W 5906	68
HK M8	N/A	HK M13	N/A	HK M8	N/A	HK M13	N/A

(20) Single Action Trigger Pull, Finger Placement (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	86	HK M13	86	HK M8	86	HK M13	96
S & W 3906	86	Sig 226	82	Ber 92FC	84	Glock 17	92
Sig 225	78	Ber 92	64	S & W 3906	84	Sig 226	88
Ber 92FC	68	S & W 5906	56	Sig 225	82	Ber 92	84
Glock 19	N/A	Glock 17	N/A	Glock 19	66	S & W 5906	84

(21) Single Action Trigger Pull, Effort (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
S & W 3906	88	HK M13	90	HK M8	86	HK M13	90
HK M8	86	Sig 226	82	Ber 92FC	80	Ber 92	84
Sig 225	74	Ber 92	58	S & W 3906	80	Glock 17	84
Ber 92FC	70	S & W 5906	50	Sig 225	78	Sig 226	82
Glock 19	N/A	Glock 17	N/A	Glock 19	66	S & W 5906	76

Glock 19 N/A Glock 19 66 S&W 5906 76

(22) Recoil (highest rating = least felt recoil)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	90	HK M13	94	HK M8	82	HK M13	82
Glock 19	80	Sig 226	80	Glock 19	78	Glock 17	80
S & W 3906	72	Glock 17	58	Ber 92 FC	74	Ber 92	76
Ber 92FC	68	Ber 92	54	S & W 3906	72	Sig 226	76
Sig 225	56	S & W 5906	46	Sig 225	70	S & W 5906	74

(23) Recovery Time (highest rating = quickest recovery time)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	94	HK M13	88	HK M8	88	Glock 17	84
Glock 19	84	Sig 226	84	Glock 19	84	Ber 92	80
S & W 3906	70	Ber 92	56	Ber 92 FC	78	Sig 226	80
Ber 92FC	60	Glock 17	56	S & W 3906	78	S & W 5906	76
Sig 225	58	S & W 5906	48	Sig 225	76	HK M13	74

(24) One Hand Unsupported Shooting (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	80	HK M13	90	HK M8	84	HK M13	88
Glock 19	74	Sig 226	72	Glock 19	76	Glock 17	80
S & W 3906	72	Glock 17	66	Ber 92 FC	74	Ber 92	76
Ber 92FC	68	Ber 92	50	Sig 225	72	Sig 226	76
Sig 225	68	S & W 5906	44	S & W 3906	70	S & W 5906	72

(25) Muzzle Flash (highest rating = least amount of flash)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	82	Sig 226	88	HK M8	84	Glock 17	82
S & W 3906	78	HK M13	86	Glock 19	82	HK M13	80
Glock 19	76	Glock 17	66	S & W 3906	78	Sig 226	76
Sig 225	64	Ber 92	58	Ber 92FC	76	Ber 92	74
Ber 92FC	62	S & W 5906	54	Sig 225	74	S & W 5906	72

(26) Grip Finish (highest rating = most comfortable)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	84	HK M13	84	Glock 19	88	Glock 17	86
Sig 225	82	Sig 226	80	HK M8	84	HK M13	86
Glock 19	74	S & W 5906	54	Sig 225	82	Ber 92	82
S & W 3906	68	Ber 92	46	S & W 3906	82	Sig 226	80
Ber 92FC	60	Glock 17	46	Ber 92FC	80	S & W 5906	74

(27) Disassembly (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	80	Sig 226	86	HK M8	94	HK M13	94
Ber 92FC	76	HK M13	76	Glock 19	92	Ber 92	90
Sig 225	76	Ber 92	68	Ber 92FC	86	Glock 17	90
S & W 3906	60	Glock 17	54	Sig 225	84	Sig 226	88
Glock 19	52	S & W 5906	32	S & W 3906	80	S & W 5906	76

(28) Reassembly (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Ber 92FC	78	Sig 226	84	Glock 19	94	Glock 17	92
Glock 19	76	HK M13	74	HK M8	94	HK M13	90
Sig 225	76	Ber 92	66	Ber 92FC	86	Ber 92	88
HK M8	70	Glock 17	62	Sig 225	82	Sig 226	88
S & W 3906	66	S & W 5906	32	S & W 3906	78	S & W 5906	76

(29) Best Weapon Over-all (asked of instructors only)

Stand. Cap.	Rating	High Cap.	Rating
HK M8	80	HK M13	88
Glock 19	76	Sig 226	82
S & W 3906	72	Ber 92	52
Sig 225	66	Glock 17	46
Ber 92FC	62	S & W 5906	36

ON-DUTY CARRY QUESTIONNAIRES

These questionnaires addressed concerns of wearing comfort and, to some extent, concealability. The 153 test subjects and 18 instructors responded to all questions in this questionnaire. The last question (regarding suitability for off-duty carry) was asked of the instructors only, based on their hands-on exposure to all test weapon brands through cyclic rotation.

Some of the responses are based on the characteristics of the leather goods (holsters and magazine pouches). The participants were not afforded the opportunity to critique the leather goods against other brands, in order to preserve the focus of the study onto the weapons themselves. All leather goods were generally of the same design, with identical snap, release and grasp mechanisms. The Evaluation Officer (who attended the initial Semiautomatic Pistol Training Course with the 18 instructors) observed that all holsters were extremely tight around the weapons until silicone spray was utilized. Furthermore, constant holstering and reholstering "broke in" the holsters and helped reduce tight fitting.

Questions #1 through #4 were asked of both test groups jointly.

(1) Since qualifying, you have carried this weapon the following number of shifts in uniform? (highest rating = percentage of shifts carrying weapon when in uniform)

Note: Standard capacity weapons were only issued to employees who usually do not wear uniforms while on duty. (e.g., vehicle theft investigators and drug task forces members).

Stand. Cap.	Rating	High Cap.	Rating
Sig 225	68	HK M13	100
Glock 19	60	Ber 92	98
Ber 92FC	54	Glock 17	92
HK M8	42	Sig 226	90
S & W 3906	42	S & W 5906	90

(2) Since qualifying, you have carried this weapon the following number of shifts on duty, out of uniform? (highest rating = percentage of shifts on duty, carrying weapon when not in uniform)

Note: High capacity weapons were only issued to employees who usually wear uniforms while on duty (e.g., road patrol, special duty, Mobile Road Enforcement personnel, commercial scale officers and sergeants, administrative and management personnel).

Stand. Cap.	Rating	High Cap.	Rating
Ber 92FC	92	HK M13	50
HK M8	88	Sig 226	34
S & W 3906	88	S & W 5906	32
Glock 19	86	Ber 92	30
Sig 225	86	Glock 17	30

(3) Since qualifying, you have fired this weapon at a firing range on the following number of occasions? (highest number = highest frequency of practice)

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	84	HK M13	88
Sig 225	84	Ber 92	86
Ber 92FC	78	S & W 5906	80
HK M8	78	Glock 17	78
S & W 3906	76	Sig 226	76

(4) Number of enforcement stops in which you unholstered the weapon. (highest rating = highest frequency of unholstering while on enforcement stops)

Stand. Cap.	Rating	High Cap.	Rating
Ber 92FC	48	Ber 92	48
S & W 3906	46	HK M13	42
HK M8	42	Glock 17	40
Glock 19	32	Sig 226	32
Sig 225	32	S & W 5906	32

Questions #5 and #6 were asked of both test groups separately.

(5) Ease of unholstering at any time (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	86	Sig 226	86	Ber 92FC	88	Sig 226	94
S & W 3906	82	HK M13	82	Sig 225	80	Ber 92	88
HK M8	76	Glock 17	52	Glock 19	78	HK M13	86
Sig 225	74	S & W 5906	52	HK M8	74	Glock 17	84
Ber 92FC	72	Ber 92	46	S & W 3906	72	S & W 5906	72

(6) Ease of reholstering at any time (highest rating = least difficult)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	86	Sig 226	90	Ber 92FC	88	Sig 226	90
HK M8	78	HK M13	82	Sig 225	82	Ber 92	86
S & W 3906	78	S & W 5906	56	HK M8	80	Glock 17	80
Ber 92FC	72	Glock 17	50	Glock 19	78	HK M13	78
Sig 225	70	Ber 92	42	S & W 3906	72	S & W 5906	76

Questions #7 through #9 were asked of both groups jointly.

(7) Unsolicited comments from peace officers of allied agencies (highest rating = comments which were most favorable)

Stand. Cap.	Rating	High Cap.	Rating
HK M8	86	HK M13	94
Sig 225	86	Ber 92	90
Glock 19	84	Sig 226	90
S & W 3906	82	Glock 17	88
Ber 92FC	74	S & W 5906	74

(8) Unsolicited comments from other citizens (highest rating = comments which were most favorable).

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	76	HK M13	86
S & W 3906	76	Sig 226	84
HK M8	72	S & W 5906	82
Sig 225	70	Ber 92	80
Ber 92FC	68	Glock 17	80

(9) Carrying comfort, walking (highest rating = most comfort)

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	90	HK M13	96
HK M8	90	Glock 17	92
Sig 225	80	Sig 226	90
Ber 92FC	78	Ber 92	88
S & W 3906	78	S & W 5906	88

Questions # 10 through #17 were asked of both groups separately.

(10)Carrying comfort, standing (highest rating = most comfort)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	84	Glock 19	88	HK M13	96
Glock 19	88	Sig 226	80	HK M8	88	Ber 92	92
S & W 3906	70	Glock 17	60	Sig 225	80	Glock 17	92
Sig 225	68	Ber 92	48	S & W 3906	78	Sig 226	92
Ber 92FC	52	S & W 5906	44	Ber 92FC	76	S & W 5906	88

(11)Carrying comfort, sitting in vehicle.(highest rating = most comfort)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	94	Glock 19	88	HK M13	96
Glock 19	88	Sig 226	78	HK M8	86	Sig 226	90
Sig 225	70	Glock 17	54	Sig 225	82	Glock 17	88
S & W 3906	68	S & W 5906	46	S & W 3906	76	Ber 92	86
Ber 92FC	52	Ber 92	40	Ber 92FC	72	S & W 5906	84

(12)Carrying comfort, sitting in chairs (highest rating = most comfort)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	90	Glock 19	88	HK M13	92
Glock 19	88	Sig 226	82	HK M8	86	Ber 92	88
Sig 225	70	Glock 17	56	Sig 225	80	Glock 17	86
S & W 3906	68	S & W 5906	44	S & W 3906	76	Sig 226	86
Ber 92FC	52	Ber 92	38	Ber 92FC	70	S & W 5906	78

(13)Carrying comfort of magazine pouch (highest rating = most comfort)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
HK M8	92	HK M13	90	HK M8	76	HK M13	92
Glock 19	88	Sig 226	82	S & W 3906	74	Glock 17	90
Sig 225	70	Glock 17	56	Ber 92FC	72	Sig 226	86
S & W 3906	68	S & W 5906	44	Glock 19	72	S & W 5906	80
Ber 92FC	52	Ber 92	38	Sig 225	72	Ber 92	78

(14)Accessibility of magazine pouch (highest rating = most convenient)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
S & W 3906	88	HK M13	88	Sig 225	80	HK M13	94
HK M8	86	Sig 226	82	Ber 92FC	78	Glock 17	92
Glock 19	80	Glock 17	50	S & W 3906	78	Sig 226	90
Sig 225	78	S & W 5906	50	Glock 19	76	Ber 92	86
Ber 92FC	68	Ber 92	32	HK M8	76	S & W 5906	86

(15)Security of weapon in holster (highest rating = most secure)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	88	Sig 226	80	Ber 92FC	100	Ber 92	100
S & W 3906	78	HK M13	72	Glock 19	100	Glock 17	100
Sig 225	76	S & W 5906	60	HK M8	100	HK M13	100
HK M8	66	Glock 17	54	Sig 225	100	Sig 226	100
Ber 92FC	62	Ber 92	50	S & W 3906	100	S & W 5906	100

(16)Security of magazine in pouch (highest rating = most secure)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	90	Sig 226	78	Glock 19	100	Ber 92	100
S & W 3906	82	HK M13	66	HK M8	100	Glock 17	100
Sig 225	78	S & W 5906	62	Sig 225	100	HK M13	100
HK M8	74	Glock 17	56	S & W 3906	100	Sig 226	100
Ber 92FC	68	Ber 92	52	Ber 92FC	98	S & W 5906	100

(17)Security of magazine in weapon (highest rating = most secure)

Instructors				Test Subjects			
Stand. Cap.	Rating	High Cap.	Rating	Stand. Cap.	Rating	High Cap.	Rating
Glock 19	80	HK M13	84	Glock 19	100	Ber 92	100
S & W 3906	78	Sig 226	68	HK M8	100	Glock 17	100
Ber 92FC	76	S & W 5906	62	S & W 3906	100	HK M13	100
HK M8	76	Glock 17	58	Ber 92FC	98	Sig 226	98
Sig 225	70	Ber 92	44	Sig 225	98	S & W 5906	98

Questions #18 and #19 were asked of both test groups jointly.

(18)Suitability for off-duty carry, based on weight (highest rating = most suitable)

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	92	Glock 17	84
HK M8	84	HK M13	82
Sig 225	78	Ber 92	68
S & W 3906	76	Sig 226	64
Ber 92FC	70	S & W 5906	58

(19)Suitability for off-duty carry, based on physical dimensions (highest rating = most suitable)

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	92	HK M13	88
HK M8	82	Glock 17	78
Sig 225	78	Ber 92	64
S & W 3906	74	Sig 226	62
Ber 92FC	70	S & W 5906	60

Question #20 was asked of the instructors only.

(20)Suitability for off-duty carry, all factors considered (highest rating = most suitable)

Stand. Cap.	Rating	High Cap.	Rating
Glock 19	90	HK M13	94
HK M8	90	Sig 226	80
S & W 3906	74	Glock 17	58
Sig 225	68	S & W 5906	42
Ber 92FC	46	Ber 92	32

ANNEX K

ALLIED AGENCY WEAPONS

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
ALAMEDA COUNTY									
Alameda SO	728	X		X					
Alameda PD	99	X	X	X					
Albany PD	30	X		X	X				
Berkeley PD	176			X					
Emeryville PD	26				X				
Fremont PD	168		X	X	X				
Hayward PD	148	X		X					
Livermore PD	58	X	X	X	X				
Moraga PD	10	X							
Newark PD	56	X	X	X					
Oakland PD	638	X	X						
Piedmont PD	20	X	X						
Pleasanton PD	57	X	X	X	X				
San Leandro PD	86	X	X	X					
Union City PD	55	X		X	X				
ALPINE COUNTY									
Alpine County SO	9	X	X	X	X			X	
AMADOR COUNTY									
Amador County SO	30	X	X		X				
Ione PD	4	X	X	X	X				
Jackson PD	8	X	X		X				
Sutter Creek PD	5	X	X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
BUTTE COUNTY									
Butte County SO	47	X		X	X				
Chico PD	50	X	X	X					
Gridley PD	10	X			X				
Oroville PD	23	X	X	X	X				
Paradise PD	26	X	X	X	X				
CALAVERAS COUNTY									
Calaveras SO	34		X	X	X				
City of Angels PD	7				X				
COLUSA COUNTY									
Colusa SO	30	X	X	X	X	X	X	X	
Colusa PD	9	X	X	X	X	X	X	X	
Williams PD	5	X	X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
CONTRA COSTA									
Contra Costa SO	518	X	X	X					
Antioch PD	71	X		X	X				
Brentwood PD	10	X	X						
Clayton PD	8	X		X					
Concord PD	137			X					
El Cerrito PD	36	X		X					
Hercules PD	14			X					
Kensington PD	11	X		X					
Martinez PD	39			X					
Pinole PD	20	X			X				
Pittsburg PD	57	X		X					
Pleasant Hill PD	41	X		X					
Richmond PD	172		X						
San Pablo PD	37	X		X	X				
Walnut Creek PD	73	X		X					
DEL NORTE COUNTY									
Del Norte SO	34	X	X						
Crescent City PD	11		X						
EL DORADO COUNTY									
El Dorado SO	116		X	X	X				
Placerville PD	19			X					
S. Lake Tahoe PD	48	X	X	X	X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
FRESNO COUNTY									
Fresno SO	298				X				
Clovis PD	57				X				
Coalinga PD	13	X	X	X	X				
Firebaugh PD	7			X					
Fowler PD	6	X	X	X	X			X	
Fresno PD	398				X				
Kerman PD	10				X				
Kingsburg PD	12				X				
Mendota PD	10								X
Reedley PD	20				X				
Sanger PD	21		X						
Selma PD	22			X					
GLENN COUNTY									
Glenn SO	24		X		X				
Orland PD	9		X						
Willows PD	7		X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
HUMBOLDT COUNTY									
Humboldt SO	81	X	X	X	X				
Arcata PD	19	X		X	X			X	
Eureka PD	41		X	X	X				
Ferndale PD	3	X	X	X	X				
Fortuna PD	14	X	X	X	X			X	
Rio Dell PD	5	X							
IMPERIAL COUNTY									
Imperial SO	117	X	X	X	X				
Brawley PD	25	X	X	X					
Calexico PD	28		X						
El Centro PD	40	X			X				
Holtville PD	9	X	X	X	X				
Imperial PD	8		X						
Westmorland PD	5		X		X				
INYO COUNTY									
Inyo SO	38		X	X	X				
Bishop PD	12				X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
KERN COUNTY									
Kern SO	584								X
Arvin PD	11			X					
Bakersfield PD	218			X	X				
Bear Valley PD	5								
Calif. City PD	8				X				
Delano PD	31		X						
Maricopa PD	2	X		X	X				
McFarland PD	5			X					X
Ridgecrest PD	28	X							
Shafter PD	10	X	X	X	X	X	X	X	
Stallion Sp. PD	2		X	X	X				
Taft PD	12	X		X	X				
KINGS COUNTY									
Kings SO	67	X		X					
Corcoran PD	15	X	X		X				
Hanford PD	36	X	X		X				
Lemoore PD	20	X	X		X				
LAKE COUNTY									
Lake SO	60	X							
Clearlake PD	21	X	X	X	X	X	X	X	
Lakeport PD	11	X	X	X	X	X	X	X	

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
LASSEN COUNTY									
Lassen SO	22	X		X	X			X	
Susanville PD	13	X	X	X	X			X	
LOS ANGELES COUNTY									
Los Angeles SO	6829	X		X					
Alhambra PD	94	X	X	X					
Arcadia PD	73	X	X	X	X			X	
Azuza PD	58	X		X	X			X	
Baldwin Park PD	63				X				
Bell Gardens PD	42	X	X		X		X		
Bell-Cudahy PD	47	X			X				
Beverly Hills PD	123	X		X	X				
Burbank PD	142	X		X	X				
Claremont PD	41		X		X				
Compton PD	138	X	X	X	X				
Covina PD	53	X	X	X					
Culver City PD	104				X	X		X	
Downey PD	107	X			X				
El Monte PD	106				X				
El Segundo PD	61	X		X	X				
Gardena PD	86	X		X	X				
Glendale PD	181	X		X					
Glendora PD	48			X					

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
LOS ANGELES COUNTY									
Hawthorne PD	84	X	X	X					
Hermosa Beach PD	35				X				
Huntington Park PD	64	X	X	X	X				
Inglewood PD	187	X	X	X	X				
Irwindale PD	18		X	X	X				
La Verne PD	35			X					
Long Beach PD	662	X		X	X	X			
Los Angeles PD	7350	X		X					
Manhattan Beach PD	58	X			X				
Maywood PD	23		X		X				
Monrovia PD	53	X		X	X	X			
Montebello PD	75				X				
Monterey Park PD	72		X						
Palos Verdes Es. PD	23		X					X	
Pasadena PD	206	X							
Pomona PD	147				X				
Redondo Beach PD	104			X					
San Fernando PD	33	X	X	X	X				
San Gabriel PD	49	X	X	X					
San Marino PD	26			X					
Santa Monica PD	152	X		X					
Sierra Madre PD	14	X		X	X				
Signal Hill PD	28	X	X	X	X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
LOS ANGELES COUNTY									
South Gate PD	89	X	X	X	X				
South Pasadena PD	29								X
Torrance PD	238	X			X				
Vernon PD	47	X			X				
West Covina PD	111		X	X					
Whittier PD	85	X	X	X	X				
MADERA COUNTY									
Madera SO	45		X	X	X				
Chowchilla PD	11			X					
Madera PD	33		X						
MARIN COUNTY									
Marin SO	150		X						
Belvedere PD	6			X					
Fairfax PD	12			X					
Mill Valley PD	20			X					
Novato PD	51		X	X					
Ross PD	7			X					
San Anselmo PD	17			X					
San Rafael PD	73	X	X	X	X				
Sausalito PD	26			X					
Tiburon PD	15			X	X				
Twin Cities PD	33		X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
MARIPOSA COUNTY									
Mariposa SO	21		X	X	X				
MENDOCINO COUNTY									
Mendocino SO	80	X	X	X					
Fort Bragg PD	15	X	X	X					
Ukiah PD	24	X	X	X	X				
Willits PD	15	X	X	X	X				
MERCED COUNTY									
Merced SO	76		X	X	X				
Atwater PD	20		X						
Dos Palos PD	7	X	X						
Gustine PD	6	X	X	X					
Livingston PD	10			X					X
Los Banos PD	21	X	X						
Merced PD	61		X	X	X				
MODOC COUNTY									
Modoc SO	11								X
Alturas PD	7								X
MONO COUNTY									
Mono SO	20		X		X				
Mammoth Lakes PD	15				X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
MONTEREY COUNTY									
Monterey SO	285		X	X					
Carmel PD	19		X						
Del Rey Oaks PD	5		X	X					
Gonzales PD	7		X						
Greenfield PD	1	X							
King City PD	12	X		X					
Marina DPS	26			X	X			X	
Monterey PD	52	X	X	X					
Pacific Grove PD	28				X				
Salinas PD	138		X	X	X				
Sand City PD	2		X						
Seaside PD	38	X	X						
Soledad PD	9		X						
NAPA COUNTY									
Napa SO	61	X	X	X	X				
Calistoga PD	10	X	X						
Napa PD	68	X	X						
Saint Helena PD	12	X		X	X				
NEVADA COUNTY									
Nevada SO	75	X	X						
Grass Valley PD	17		X						
Nevada City PD	7	X	X	X	X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
ORANGE COUNTY									
Orange SO	1046	X							
Anaheim PD	325	X		X	X	X			
Brea PD	82	X			X				
Buena Park PD	88	X	X	X	X	X			
Costa Mesa PD	142	X			X				
Cypress PD	49		X	X					
Fountain Valley PD	60	X	X	X	X				
Fullerton PD	150		X		X				
Garden Grove PD	161	X	X		X				
Huntington Bch. PD	209				X				
Irvine PD	118	X			X	X			
La Habra PD	53	X		X					
La Palma PD	22				X				
Laguna Bch. PD	40	X		X	X				
Los Alamitos PD	24				X				
Newport Beach PD	152	X			X	X			
Orange PD	137			X	X				
Placentia PD	47	X		X	X				
San Clemente PD	46				X				
Santa Ana PD	359		X	X	X	X			
Seal Beach PD	41				X				
Stanton PD	33	X							
Tustin PD	64	X							

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
ORANGE COUNTY									
Westminster Pd	90	X	X	X	X				
PLACER COUNTY									
Placer SO	158		X	X	X				
Auburn PD	19		X						
Colfax PD	4		X	X			X		
Lincoln PD	11		X	X					
Rocklin PD	17				X				
Roseville PD	44		X	X	X				
PLUMAS COUNTY									
Plumas SO	33		X	X					
RIVERSIDE COUNTY									
Riverside SO	650	X		X	X				
Banning PD	26	X	X		X				
Beaumont PD	16	X	X	X	X				
Blythe PD	16				X				
Cathedral City PD	34	X		X	X				
Coachella PD	24	X		X					
Corona PD	74	X		X	X				
Desert Hot Sp. PD	14	X	X	X	X	X	X	X	
Hemet PD	35	X	X	X	X		X	X	

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
RIVERSIDE COUNTY									
Indio PD	47		X	X					
Palm Springs PD	82	X		X	X	X		X	
Perris PD	29		X	X					
Riverside PD	271			X					
San Jacinto PD	25	X		X					
SACRAMENTO COUNTY									
Sacramento SO	863	X	X	X	X				
Folsom PD	22		X		X				
Galt PD	14	X	X	X	X				
Isleton PD	5								X
Sacramento PD	568			X					
SAN BENITO COUNTY									
San Benito SO	19		X	X					
Hollister PD	22			X					
San Juan Bautista PD	3		X	X	X				
SAN BERNARDINO COUNTY									
San Bernardino SO	929	X	X						
Adelanto PD	10	X		X					
Barstow PD	29			X	X				
Chino PD	76		X		X				

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
SAN BERNARDINO COUNTY									
Colton PD	51			X					
Fontana PD	70		X						
Montclair PD	47	X	X		X				
Needles PD	11	X	X	X	X				
Ontario PD	150	X	X		X				
Redlands PD	63				X				
Rialto PD	76		X		X				
San Bernardino PD	244		X						
Upland PD	65		X		X				
SAN DIEGO COUNTY									
San Diego SD	1131	X		X					
Carlsbad PD	65		X						
Chula Vista PD	137	X		X	X				
Coronado PD	42	X			X				
El Cajon PD	110	X	X	X					
Escondido PD	108		X	X					
La Mesa PD	53	X		X					
National City PD	73	X	X	X	X		X		
Oceanside PD	143		X	X					
San Diego PD	1721	X		X					

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
SAN FRANCISCO COUNTY									
San Francisco SO	393	X	X	X					
San Francisco PD	1973		X	X					
SAN JOAQUIN COUNTY									
San Joaquin SO	327	X	X						
Escalon PD	8	X		X					
Lodi PD	61	X	X	X					
Manteca PD	40	X		X					
Ripon PD	10	X	X	X					
Stockton PD	260	X		X					
Tracy PD	39	X		X					
SAN LUIS OBISPO COUNTY									
San Luis Obispo SO	109	X	X	X	X			X	
Arroyo Grande PD	18			X					
Atascadero PD	25	X	X						
Grover City PD	14		X	X					
Morro Bay PD	17	X		X	X				
Paso Robles PD	28	X	X	X	X				
Pismo Beach PD	15			X					
San Luis Obispo PD	51		X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
SAN MATED COUNTY									
San Mateo SO	304		X						
Atherton PD	19		X						
Belmont PD	32		X	X	X				
Brisbane DPS	16			X					
Broadmoor PD	8			X					
Burlingame PD	46			X					
Colma PD	12		X						
Daly City PD	101	X							X
E. Palo Alto PD	35		X						
Foster City PD	37	X							
Half Moon Bay PD	13			X					
Hillsborough PD	23	X	X	X					
Menlo Park PD	38			X					
Millbrae PD	24		X	X					
Pacifica PD	45			X					
Redwood City PD	78		X		X				
San Bruno PD	47		X						
San Carlos PD	36		X	X	X				
San Mateo PD	109								X
S. San Francisco PD	75		X						

ALLIED AGENCY WEAPONS

	# Sworn	.38	.357	9mm	.45 ACP	.45 LC	.41	.44	ANY
SANTA BARBARA COUNTY									
Santa Barbara SO	224			X					
Carpinteria PD	19	X	X	X					
Guadalupe PD	9			X					
Lompoc PD	36	X		X					
Santa Barbara PD	132	X	X	X					
Santa Maria PD	62			X					
SANTA CLARA COUNTY									
Santa Clara SO	803	X	X	X	X		X	X	
Campbell PD	41		X		X				
Gilroy PD	41	X	X	X	X		X		
Los Altos PD	27	X	X	X	X				
Los Gatos PD	41		X	X					
Milpitas PD	68	X		X	X				
Morgan Hill PD	27	X	X	X	X				
Mountain View PD	79		X	X					
Palo Alto PD	99	X			X				
San Jose PD	1010		X	X	X		X	X	
Santa Clara PD	150		X	X	X	X		X	
Sunnyvale DPS	208			X					

ANNEX L

ADMINISTRATIVE
DIRECTIVE

ADMINISTRATIVE DIRECTIVE

MIS COMM-NET MESSAGE

ALL COMMANDERS

PERSONNEL BUREAU

ACTION REQUIRED

SUBJECT: 9MM PISTOL EVALUATION - EFFECT ON TRANSFERS

COMMANDERS SHALL ENSURE THAT ALL UNIFORMED PERSONNEL, INCLUDING THOSE OFF DUTY, ARE MADE AWARE OF THE CONTENTS OF THIS MESSAGE. ADDITIONALLY, THIS MESSAGE SHALL BE POSTED IN A CONSPICUOUS LOCATION FOR THE DURATION OF THE SEMIAUTOMATIC PISTOL EVALUATION (DECEMBER 31, 1989).

THE DEPARTMENT WILL BE CONDUCTING A FIELD EVALUATION OF FIVE BRANDS OF 9MM SEMIAUTOMATIC PISTOLS. THE EVALUATION WILL COMMENCE ON JANUARY 2, 1989 AND CONCLUDE ON DECEMBER 31, 1989. ALL UNIFORMED PERSONNEL (REGARDLESS OF RANK) WITHIN THE FOLLOWING COMMANDS WILL BE PARTICIPANTS:

SOLANO AREA	VALLEY DIVISION INVESTIGATIVE SERVICES (ISU)
BRIDGEPORT AREA	GOLDEN GATE DIVISION ISU
GARBERVILLE AREA	GOVERNOR'S PROTECTIVE UNIT, SACRAMENTO

ADDITIONALLY, ALL UNIFORMED MEMBERS IN THE DRUG TASK FORCES OF NORTHERN, VALLEY, AND GOLDEN GATE DIVISIONS WILL PARTICIPATE IN THE 9MM EVALUATION.

ONE OF THE FEATURES OF THE EVALUATION REQUIRES THAT THE WEAPONS REMAIN IN THE TEST COMMANDS, AND THAT PERSONS WHO TRANSFER OUT OF THE EVALUATION SITES WILL NOT TAKE THE PISTOLS WITH THEM. SIMILARLY, EMPLOYEES WHO WISH TO TRANSFER INTO AN EVALUATION COMMAND WILL BE REQUIRED TO CARRY THE 9MM PISTOL AFTER INITIAL QUALIFICATION TRAINING. UNIFORMED EMPLOYEES WITH TRANSFER REQUESTS ON FILE TO A TEST COMMAND SHALL BE DIRECTED TO CONSIDER THESE ADDITIONAL FACTORS PRIOR TO THE CLOSE OF THE TRANSFER BOOKS, AND MAKE CANCELLATIONS AND AMENDMENTS BEFORE THE DEADLINE DATE.

ALL REQUESTS FOR TRANSFER (CHP 220) WHICH ARE SUBMITTED FOR ASSIGNMENT TO A TEST SITE SHALL BE ANNOTATED BY COMMANDERS IN THE FOLLOWING MANNER:

INDICATE IN THE "REMARKS" SECTION OF BOX B THAT THE EMPLOYEE IS WILLING TO PARTICIPATE IN THE 9MM FIELD EVALUATION.

A COMM-NET MESSAGE WILL BE DISSEMINATED AT THE CONCLUSION OF THE FIELD EVALUATION, REMOVING THE ABOVE INDICATED TRANSFER POLICY. QUESTIONS REGARDING THIS COMM-NET SHOULD BE REFERRED TO OPERATIONAL PLANNING SECTION AT (916) 445-1626 OR ATSS 485-1626.

CHP HDQTRS/OFFICE OF THE COMMISSIONER

1.8492.A7137.4812o

CONFIRMING COPY TO 041

ANNEX M

MASTER SECURITY
LOG

CALIFORNIA HIGHWAY PATROL
NINE MILLIMETER SEMIAUTOMATIC PISTOL

MASTER SECURITY LOG

PAGE: _____

COMMAND NAME: _____ CODE: _____

AREA/DIVISION PISTOL COORDINATOR:

_____

DATE	BRAND	MODEL	SERIAL#	RECIPIENT	CONDITION

LOG CONTINUATION

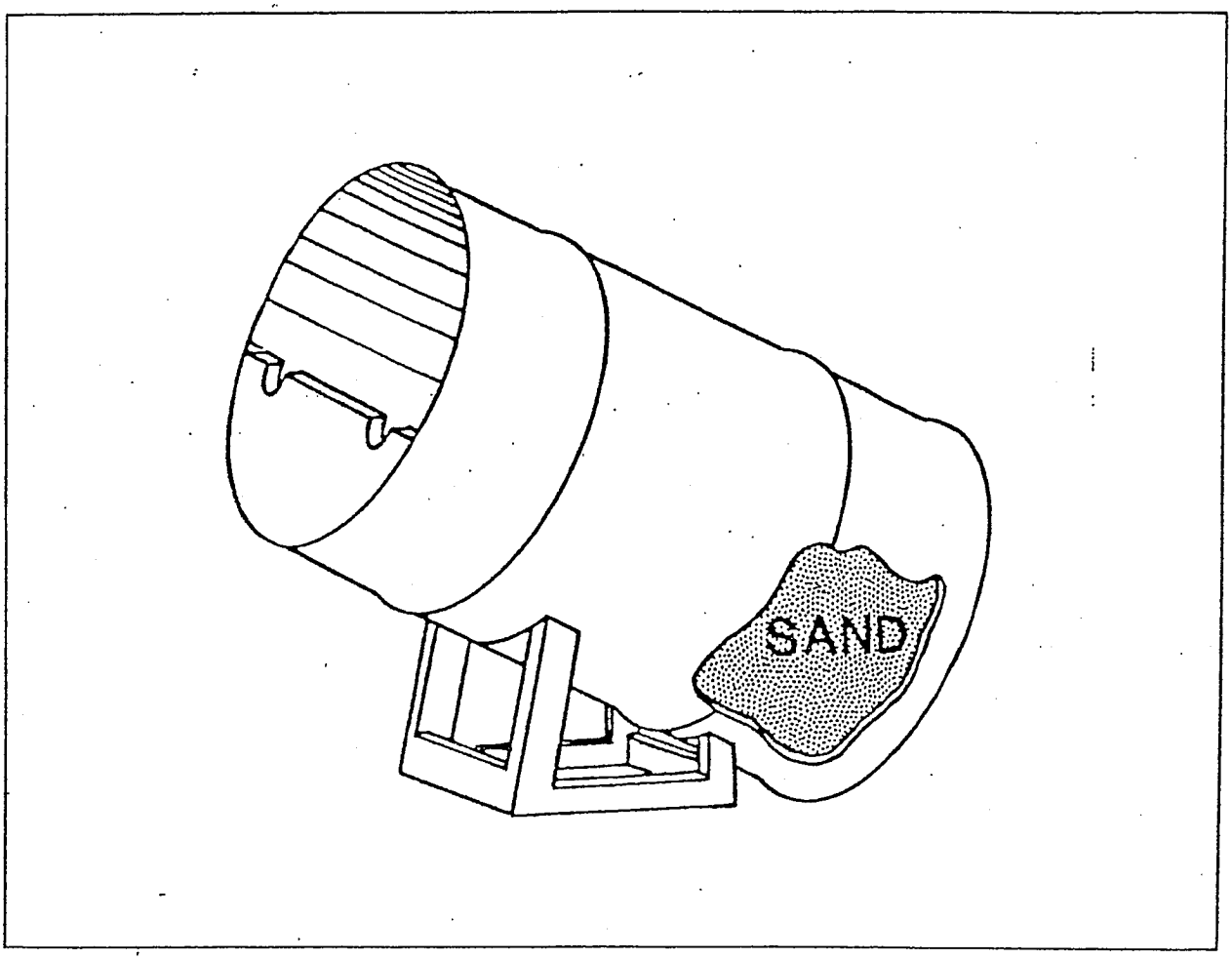
PAGE: _____

DATE	BRAND	MODEL	SERIAL#	RECIPIENT	CONDITION

ANNEX N

CLEARING TUBE

CLEARING TUBE



CALIFORNIA HIGHWAY PATROL ACADEMY

SEMIAUTOMATIC PISTOL FIELD OFFICERS TRANSITIONAL COURSE

TOPICAL OUTLINE

I. Introduction.

A. Course Content.

1. Brief overview of course.

2. Policy, new and old, (handout).

3. Requirements for passing course.

B. Pistol background.

1. Selection process.

C. Equipment issue.

II. Smith & Wesson Model 4006 Pistol.

A. Specifications.

B. Nomenclature.

III. Pistol Maintenance Requirements.

A. Basic Field Stripping.

1. Assemblies; identify and inspect.

B. Cleaning Procedures.

IV. Operation of the Smith & Wesson Model 4006 Pistol (Dummy Rounds Required).

A. Basic Function.

1. Feed, fire, extract and eject.

B. Loading.

C. Chambering.

D. Unloading.

E. Reloading.

1. In battery.

2. Out of battery.

V. Basic Shooting Techniques.

A. Fundamentals.

1. Grip.

2. Breath.

3. Stance.

4. Sight alignment.

5. Trigger control.

VI. Pistol Handling Techniques.

A. Drawing.

B. Reholstering.

C. Malfunction Identification and Clearing.

REVIEW AND TEST

VII. Introduction to Shooting Exercises.

A. "Safety" Primary Consideration.

B. "Prepare for Live Fire."

C. "Clear and Make Safe."

VIII. Range Exercises.

A. Defensive Firing Course.

B. Qualification.

C. Stress Courses.

D. Inspection Arms Procedure.

CALIFORNIA HIGHWAY PATROL

AUTHORIZED WEAPONS-RELATED POLICY AND REGISTRATION REQUIREMENTS

I. Weapons Authorized.

A. Primary.

1. Departmental issued, maintained, and inspected.

2. One weapon, one caliber.

3. Training and proficiency testing: Departmentally mandated and performed.

4. All uniformed employees regardless of assignment.

5. Inspection: Semi-annual.

6. Monthly shoots, qualification twice yearly.

B. Secondary - Carried in Addition to Primary (Not Mandatory).

1. Only one selected from list of approved weapons and requested by memorandum to the Commander.

2. List prepared by Academy Weapons staff and reviewed yearly (attached).

3. Caliber.

a. .38, .357, .40 S&W.

4. Make and model restricted to meeting manufacturer's specifications, no modified weapons.

a. Revolver: Colt (magnum frame only); Ruger; S&W (steel frame only).

b. Semi-automatic: Smith & Wesson (.40 S&W) only. (Same function and caliber as primary.)

5. Qualification: Yearly.

6. Inspection: Annually for revolvers and semi-annually for semi-automatic pistols. All performed by Departmental personnel.

7. Maintenance: Responsibility of officer.

8. Officer is only allowed to designate or change the secondary weapon during the month of annual performance appraisal.

   EXCEPTION: If the weapon is damaged and can't be carried, it may be changed.

C. Off Duty.

1. Only one selected from list of approved off-duty weapons, and requested by memorandum to the Commander.

2. List prepared by Academy staff and reviewed yearly (attached).

3. Caliber.

   a. .38, .357, 9mm, .40 S&W, 45 ACP, 10mm (FBI load only).

4. Wider variety of acceptable weapons.

   a. Strict, functional requirements.

      (1) Double action only, decocking lever, firing pin safety.

   b. Revolver: Colt, Ruger, S&W (same as secondary).

   c. Semi-automatic pistol (list attached).

5. Inspections.

   a. Weapons that also appear on the "Secondary Weapon List" will be inspected by an Area Weapons Officer.

   b. All other authorized weapons must be inspected and certified bi-annually by factory authorized gunsmith at officer's expense. (Address information, approximate cost and certification form attached.)

6. Qualification: required yearly.

7. Maintenance: responsibility of officer.

8. May be designated or changed only during annual performance appraisal.

   EXCEPTION: If the weapon is damaged and can't be carried, it may be changed at this time.

II. Ammunition Authorized.

A. Only ammunition provided by the Department will be authorized for use in any weapon carried by officers pursuant to their peace officer status (primary, secondary, or off duty). The Department will provide 50 rounds annually for proficiency testing and carrying in secondary and off-duty weapons specified by officers (100 rounds total yearly).

III. Training (Proficiency).

A. Provided.

1. Primary Weapon.

B. Not provided.

1. Secondary and off duty; proficiency testing will be required yearly to ensure officers are capable of loading, unloading, and firing their weapon safely.

C. Qualification.

1. Yearly testing (secondary and off duty).

D. Safety (demonstrated yearly).

1. Yearly testing (secondary and off duty).

IV. Weapon Registration.

A. All weapons carried by any uniformed member pursuant to his/her employment as a peace officer.

1. Covers all categories (primary, secondary and off duty).

B. Departmental (CHP 4).

1. Completed and on file for each weapon in each category.

2. Maximum number of weapons authorized; three, one in each category for each uniformed employee.

AUTHORIZED SECONDARY ON-DUTY FIREARM LIST 1991

.40 S&W Caliber

Smith & Wesson (3rd Generation) semi-automatic
.38/.357 revolvers (blue or stainless only)
Smith & Wesson (steel frames only)
Colt (.357 magnum frames only)
Ruger

AUTHORIZED OFF-DUTY FIREARMS LIST 1991

9mm Caliber

HK P7 M8
HK P7 M13
Beretta 92SB and 92SB-F
Beretta 92F
Beretta 92FC
Smith & Wesson
(3rd Generation models)
(2nd Generation with firing pin block installed)
Sig Sauer 226
Sig Sauer 256
Sig Sauer 228
Sig Sauer 220
Ruger P-85
Walther P-88
Walther P-4
Astra A-90

10mm (FBI Round)

Smith & Wesson (3rd Generation only)
Colt Double Eagle

.40 S&W Caliber

Smith & Wesson (3rd Generation)

.45 Caliber

All S&W (3rd Generation only)
Sig Sauer 220
Colt Double Eagle Series 90

.38/.357 Revolvers (Blue or Stainless Only)

Smith & Wesson (steel frames only)
Colt (.357 magnum frames only)
Ruger

CHP OFF-DUTY FIREARM INSPECTION REPORT

INSPECTION STATIONS AND APPROXIMATE PRICES

Weapon Manufacturer		Safety Inspection Price
Colt	MCI Talcott Road West Hartford, CT 06110 Phone # 203-236-6311	Varies
Sig Sauer	INC Corporate Park Exeter, NH 03833 Phone # 603-772-2302	$15.00 + shipping
Beretta	Bolsa Gunsmithing 7404 Bolsa Avenue Westminster, CA 92683 Phone # 714-894-9100	$25.00 to $30.00
Heckler-Koch	14601 Lee Road Chantilly, VA 22020 Phone # 703-450-1900	No charge
Interarms	Walther & Astra 10 Prince Street Alexandria, VA 22314 Phone # 703-548-1400	$15.00 + shipping
Sturm	Ruger & Co. Inc. Ruger Road Prescott, AZ 86301 Phone # 602-778-6555	Varies

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Field Stripping Procedures

FIELD STRIPPING PROCEDURES

1. Place decocking lever (safety) in the ON position.

2. Remove magazine and empty, if necessary.

3. Move slide to rear and lock OPEN with slide stop check for empty chamber. (Place any ammunition in safe place away from cleaning area.)

4. Move decocking lever (safety) up to fire position.

5. Unlock slide and move disassembly notch directly over round part of slide stop and hold. Remove slide stop while holding slide in this position. (A fired case or a dummy round may be used to hold slide in this position.)

6. Slowly allow slide to move forward and pull off front of frame. The sear release lever will automatically drop hammer when slide is pulled off (keep hands away from hammer). As the slide is moved forward, the recoil spring and guide will start to appear on forward bottom portion of slide. Be sure to retain them with thumb of hand used to remove slide. Once alide assembly is off, set grip frame aside.

7. Remove recoil spring and guide from slide by moving forward and then away from barrel slightly. Always keep a firm grip on spring and rod. Allow spring to relax and remove assembly. Remove spring from guide.

8. While holding slide upside down, push barrel (at breech end) through ejection port with one finger to unlock from slide. With the other hand, grasp feed ramp area and pull up and to the rear until barrel is separated from slide.

9. You are now ready to begin cleaning.

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Cleaning Procedures

MATERIALS NEEDED:

1. Break-Free CLP.
2. Chamber brush.
3. Bore brush.
4. Cleaning rod.
5. Patch holder (eye).
6. Patches.
7. Nylon tooth brush (8-606-75).
8. Stainless steel tooth brush (8-606-70).
9. Rags or handy wipes.

1. BARREL.

   a. Using nylon brush and Break-Free, clean entire outside of barrel, including feed ramp, locking surfaces, and muzzle (stainless steel tooth brush may have to be used if barrel is extremely dirty. Use only if nylon brush does not clean adequately).

   b. Attach chamber brush to rod handle; use one drop of Break-Free in chamber. Clean chamber.

   c. Attach stainless steel bore brush to rod and handle; use one drop of Break-Free at breech end, clean barrel, move bore brush all the way through before attempting to reverse direction. Always clean barrel from breech end.

   d. Attach eye and patch to rod and run patch through barrel starting at breech end.

   e. Wipe dry and check barrel for cleanliness, cracks, bulges, deformities, burrs, etc.

   f. Put a light coat of Break-Free on entire outside of barrel. Special attention to locking lug and muzzle areas should be taken.

2. RECOIL SPRING AND GUIDE.

   a. Wipe off any loose debris from guide. Depress plunger to make sure it is spring loaded and does not stick in the down position. Apply light coat of Break-Free to entire surface.

   b. Wipe off any loose debris from spring and apply a light coat of Break-Free to spring (the spring may have a slight curve), but ensure coils are uniform and there are no kinks.

3. SLIDE.

a. Moisten all dirty areas with Break-Free. Use nylon tooth brush and brush entire slide inside and out. Pay special attention to bolt face, slide rail cuts, locking lug cuts, and rear of firing pin. The stainless steel tooth brush may have to be used on the bolt face to remove all carbon build up. Also ensure the hook portion of the extractor is clean (between bolt face and extractor).

b. Wipe entire slide down with rag.

c. Check slide for cracks, excessive wear, and burrs.

d. Check extractor to ensure it is spring loaded, the hook is not broken, and the pin is below flush on top and bottom.

e. Rotate decocking lever back and forth to ensure freedom of movement. Check for cracks and burrs, and that it locks into and has spring tension in the on and off positions. Make sure right-hand lever is locked into position.

f. Hold slide upside down, look inside and just forward of the safety. There are two plungers, one metal and one plastic, check these for spring tension and wear(the metal tip of mechanical pencil may be used). When depressed, they should return with their own spring tension and should not bind or be sticky.

g. Muzzle end of slide, check the busing that the barrel slides through; it must be slight.

h. Check front and rear sight.

i. Use a couple drops of Break-Free on a patch and wipe entire outside of the slide. Then lightly oil the following areas: slide rails, locking lug cuts, safety (inside, and work safety a few times), and busing.

4. SLIDE STOP.

a. Use nylon brush and scrub entire stop.

b. Check plunger to ensure it is spring loaded.

c. Check for burrs and abnormal wear.

5. FRAME. DO NOT REMOVE THE STOCKS.

a. Moisten dirty area with Break-Free. Use nylon tooth brush and scrub rails and all other surfaces that are dirty. Care must be taken while brushing so bristles are not torn off and jammed between parts or small springs bent out of place.

b. Clean trigger and trigger guard area with brush and rag.

c. Cock hammer and clean. Decock after cleaning.

d. Use a rag and carefully clean magazine well.

e. Check for cracks, excessive wear, burrs, etc. Check for any visible broken or missing parts. The ejector (on left side of hammer), and the sear release lever, and firing pin safety lever (on right side of hammer) should move up and down freely and have some spring tension on them. (Ensure hammer is in down position before testing the levers.)

6. MAGAZINE(S).

a. Remove floor plate by depressing plunger through hole. Once floor plate starts to move, remove punch. Push floor plate off with one hand and use thumb of other hand to hold magazine spring in place. Now allow spring to relax slowly. Remove spring and follower. Do not remove tab from spring. Clean inside of magazine with dry rag (no oil). Wipe off follower and spring. Check follower for chips or cracks.

b. Reinstall follower (will only go in easy one way).

c. Reinstall spring and tab (the magazine and tab have square and rounded sides, these match). Depress spring and slide floor plate back into place. When floor plate is in correct position the tab will lock it into place. Sometimes, you may have to tap magazine on bench to get button to snap into hole in floor plate.

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Reassembly/Function Check

1. REASSEMBLY.

   a. Ensure hammer is in the fired (down) position in the frame and the decocking lever is in the fire (off) position in the slide.

   b. Install recoil guide into spring.

   c. Replace barrel into slide. Barrel must be locked into the slide before installing recoil spring and guide.

   d. Install recoil spring and guide. Rear end of guide must lock into the small cut-out on the bottom of the barrel. Once in place, spring and guide must be held in position until slide is started back into the frame.

   e. Line up slide rails with frame rails and start slide to rear. Push slide back until it almost touches the ejector (left-hand side of hammer). Depress the ejector and the slide will move back approximately 1/2 inch. Now, depress the firing pin safety lever and sear release lever (right-hand side of hammer) and push slide to rear, over hammer, until the disassembly notch in slide lines up with the slide stop hole and hold it in this position. (There will be some resistance while moving the slide to the rear. This is due to the tension from the recoil spring and recocking of the hammer.) Make sure the barrel is pushed all the way to the rear and install the slide stop. (A fired case or dummy round may be used to hold slide in this position.)

2. FUNCTION CHECK.

   a. Work slide back and forth, check for roughness or stickiness.

   b. Check decocking lever for proper operation. When rotated to the on position, hammer must drop.

   c. Manually check slide stop (magazine out). Pull slide to rear and move slide stop up with thumb. Release slide.

   d. Empty weapon and magazine.

   e. Insert EMPTY magazine, place decocking lever down, pull trigger. HAMMER MUST NOT FALL. Rotate lever up to fire position; hammer must fall DA and SA. Decocking lever in fire position, remove magazine, hammer must not fall DA or SA.

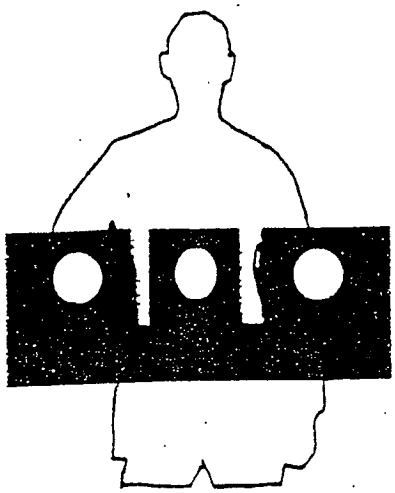
f. Empty magazine installed, pull slide to rear, slide stop must lock side to rear. Remove magazine, pull slide to rear and let go. Slide must go all the way closed on its own.

g. All empty magazines must drop free on their own with the slide closed and locked open when the magazine release is pushed.

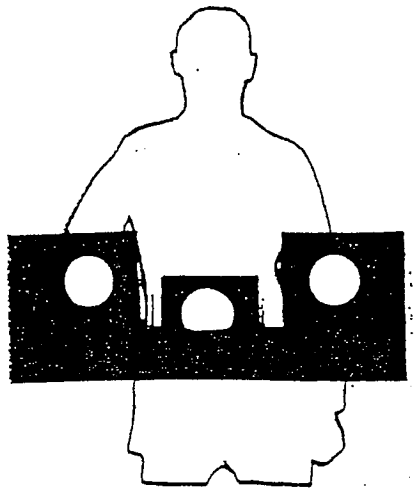
h. Decock hammer.

SMITH & WESSON Model 4006

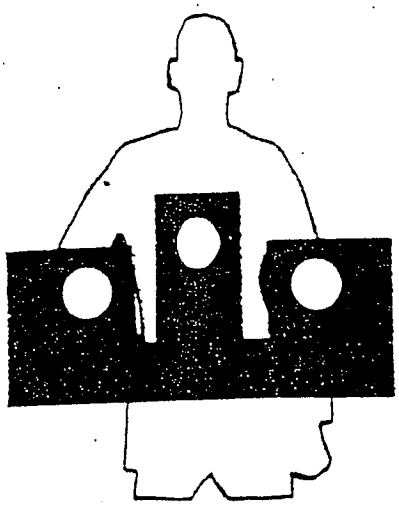
3 DOT SIGHT ALIGNMENT SYSTEM



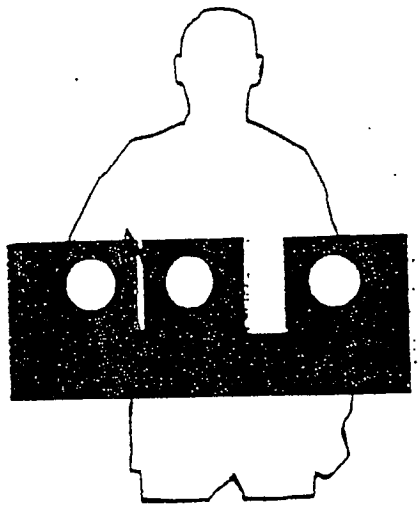
CORRECT SIGHT PICTURE
(All Distances)



ACCEPTABLE FLASH
SIGHT PICTURE
(Close Range)

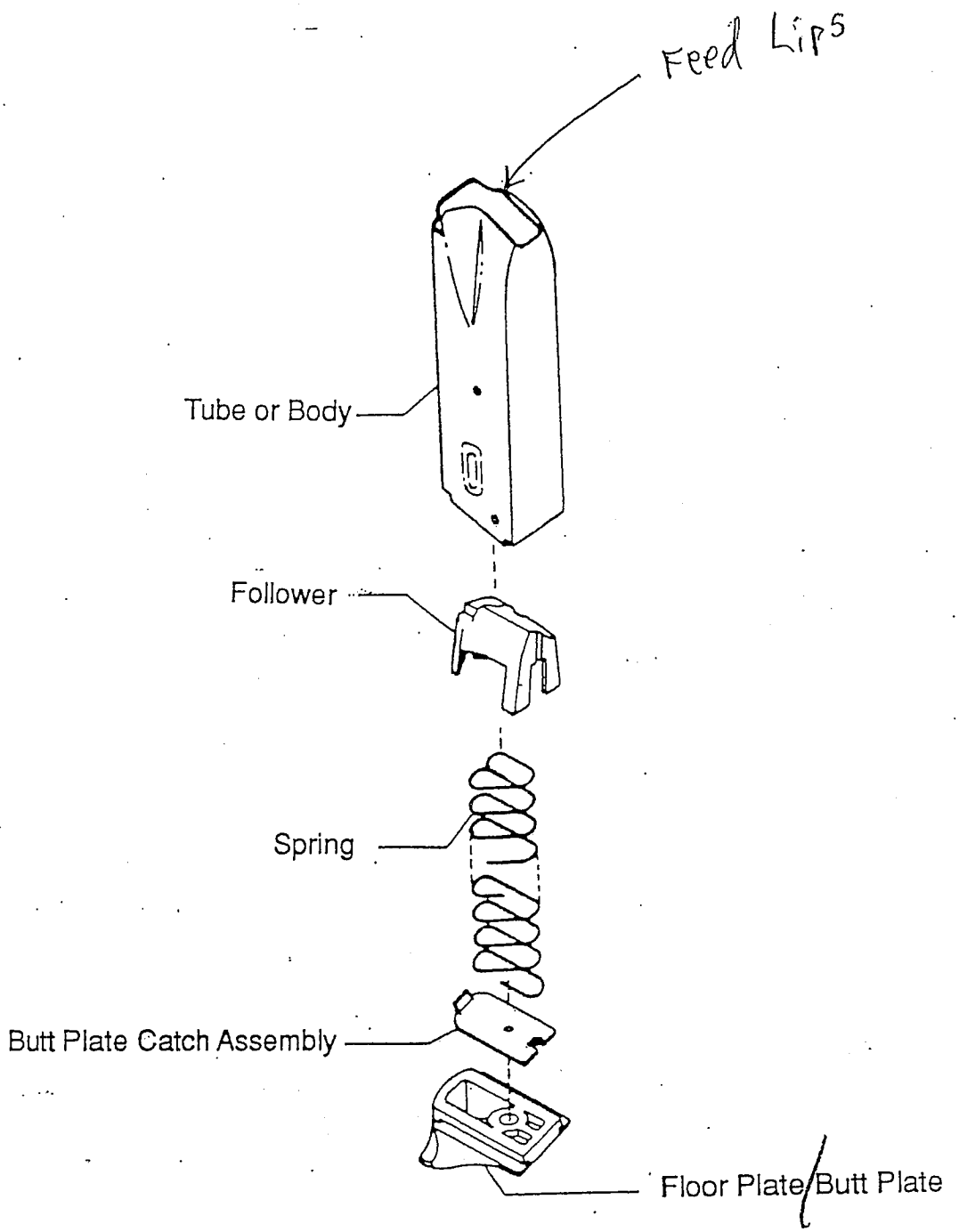


ACCEPTABLE FLASH
SIGHT PICTURE
(Close Range)

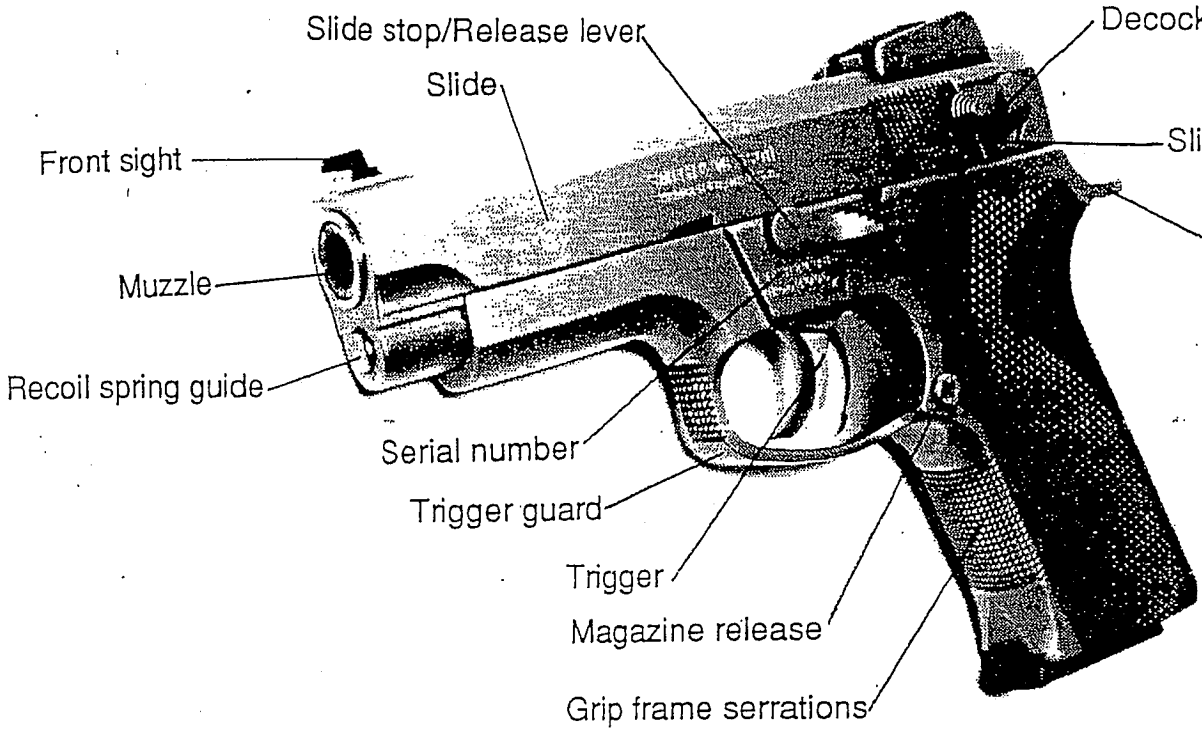


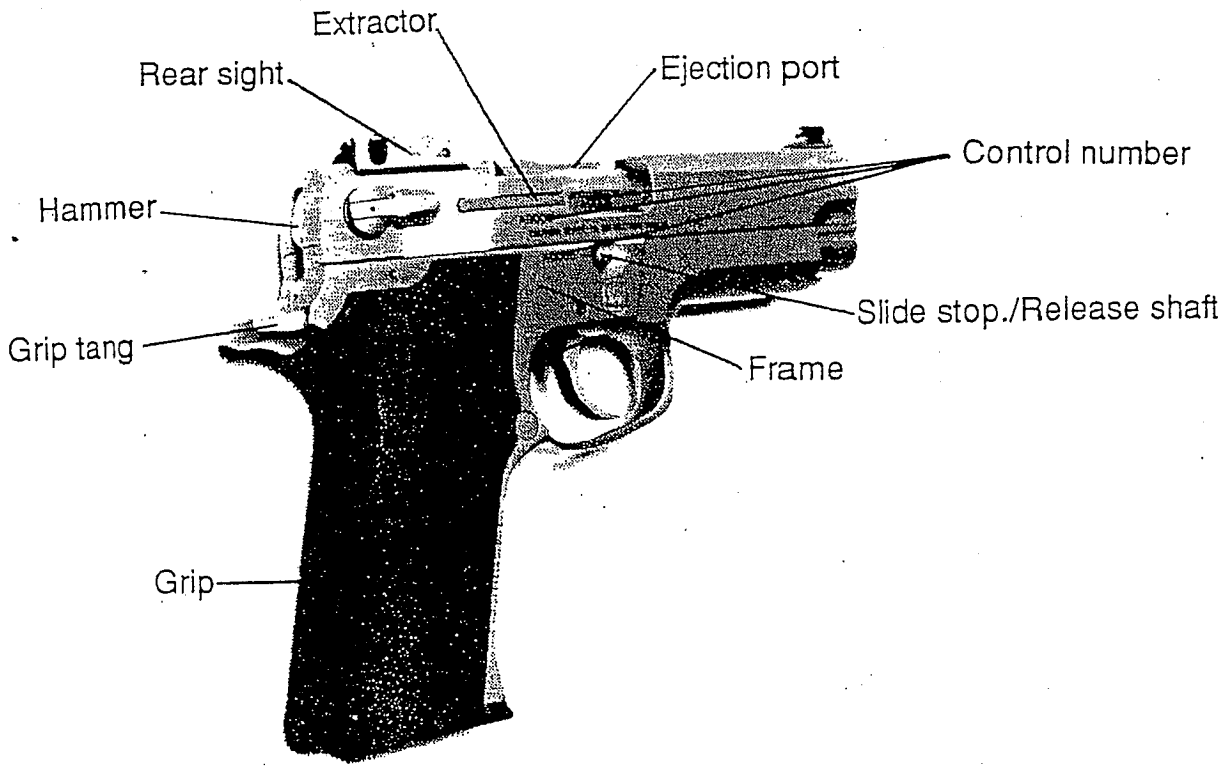
ACEPTABLE FLASH
SIGHT PICTURE
(Close Range)

MAGAZINE PARTS

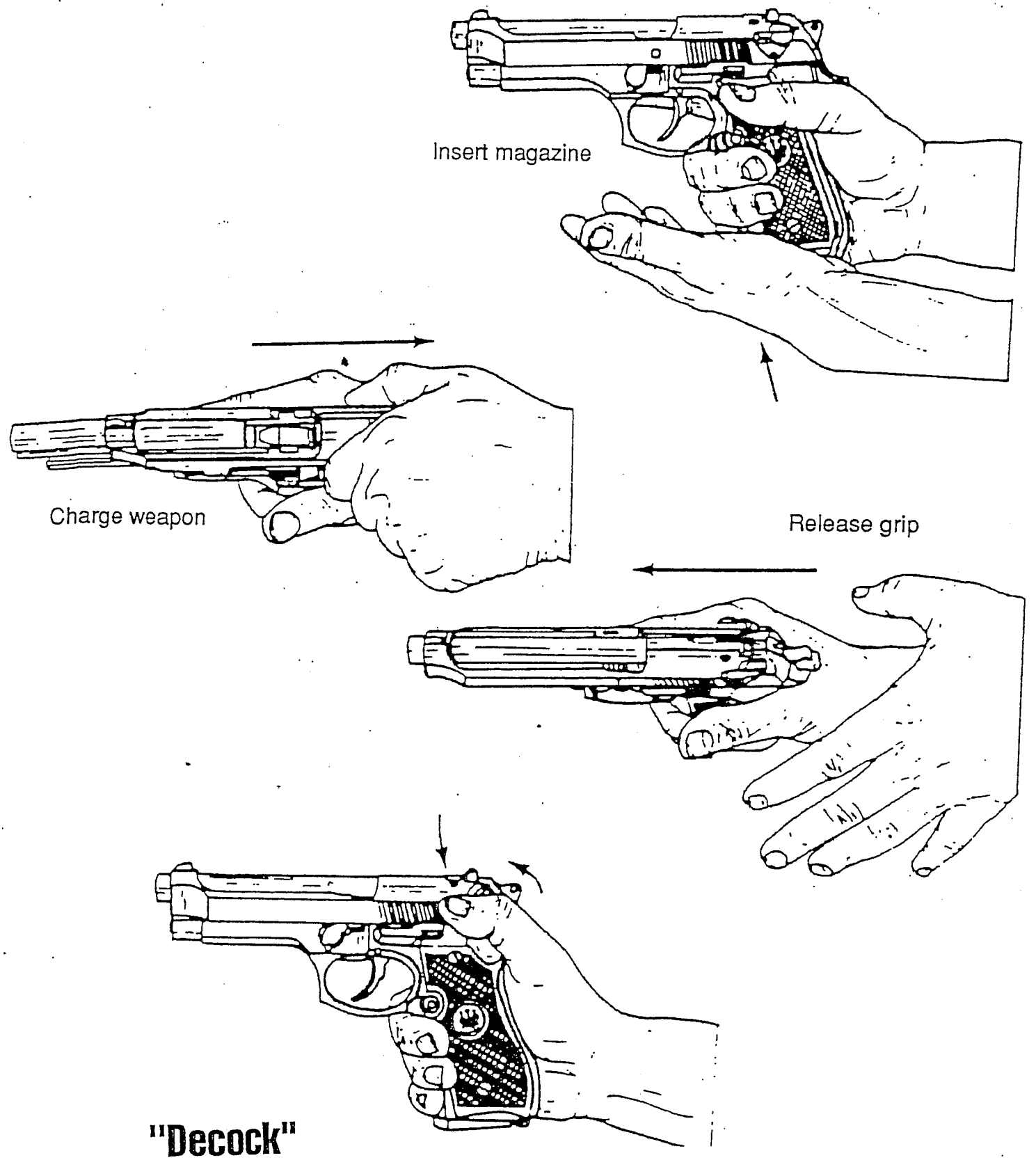


SMITH & WESSON
MODEL 4006 NOMENCLATURE



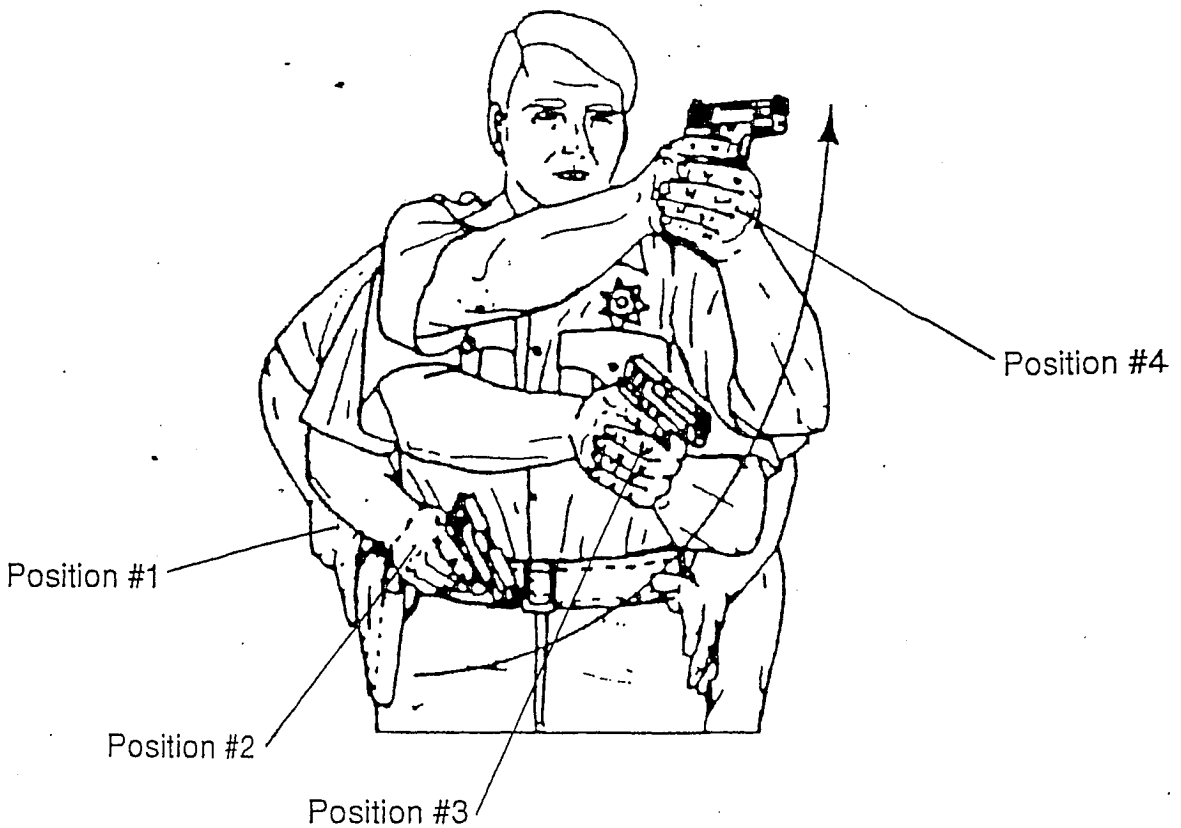


PISTOL LOADING PROCEDURES



DRAWING WEAPON TO FIRE

CONTINUOUS MOVEMENT THROUGH
4 DRAWING POSITIONS



CORRECT DRAWING TECHNIQUE

4 POSITIONS - 2 HANDED FIRING

Position 1

Position 2
Close-in Firing Position

Move to Low Ready
Position

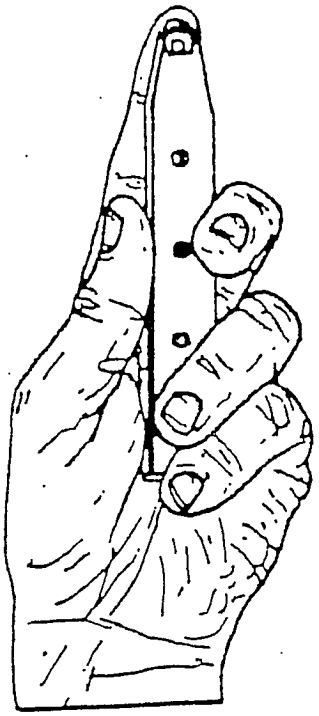
Finger Off Trigger

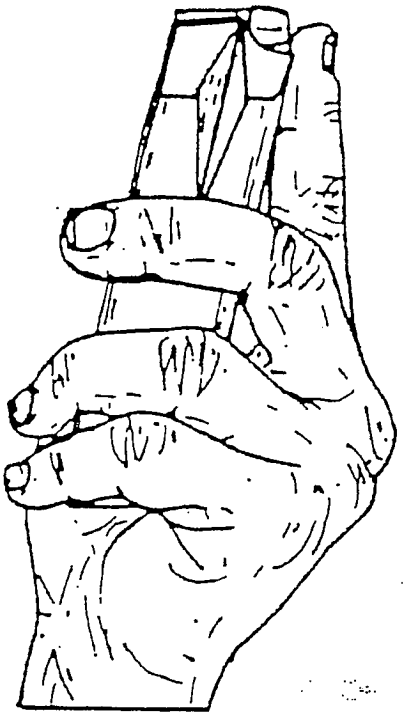
Position 3
Low Ready Position

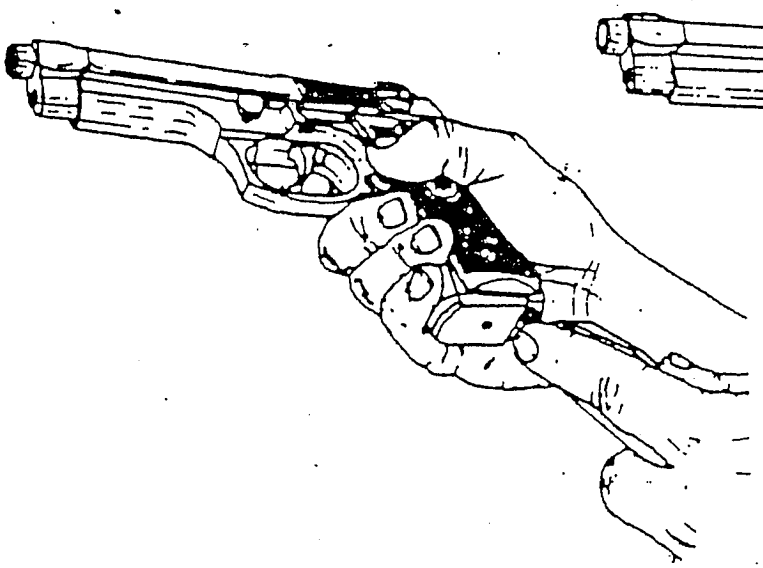
Firing Position

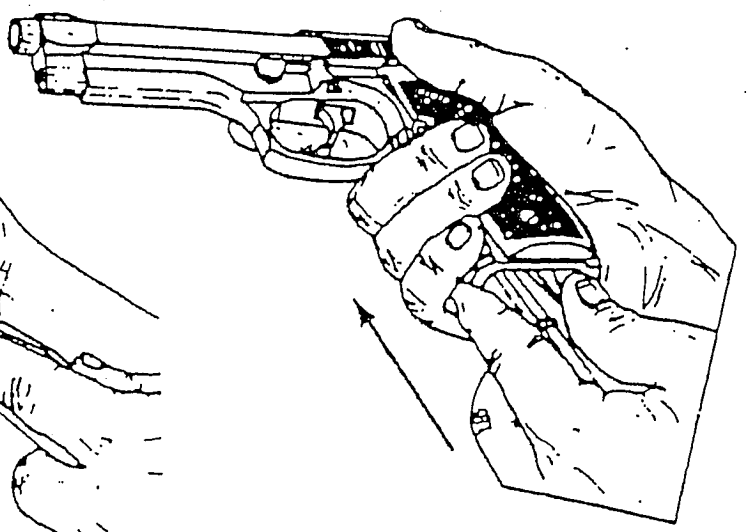
Finger On Trigger

MAGAZINE GRIP AND PROPER INSERTION



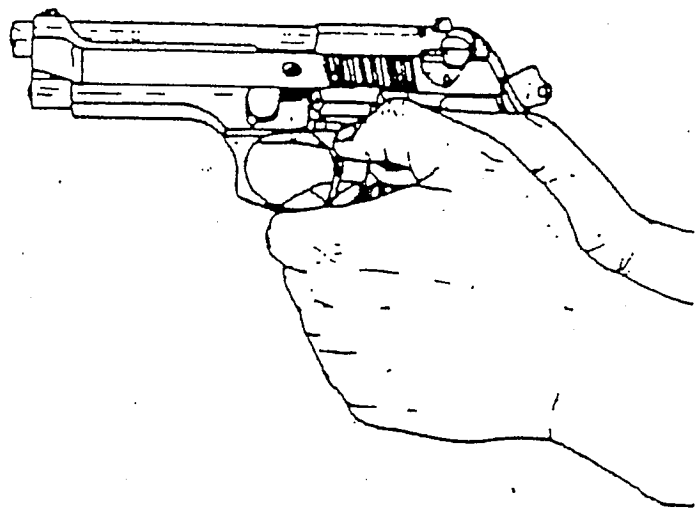




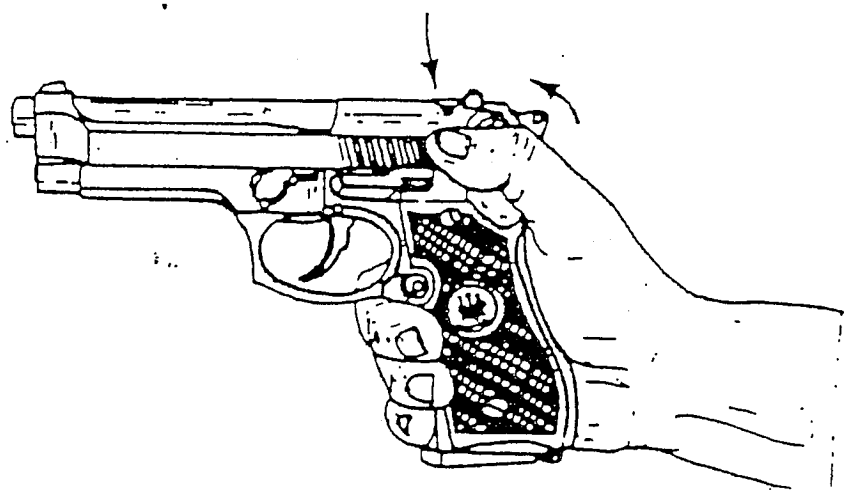


Seat with heel of hand

TYPICAL DECOCKING PROCEDURE

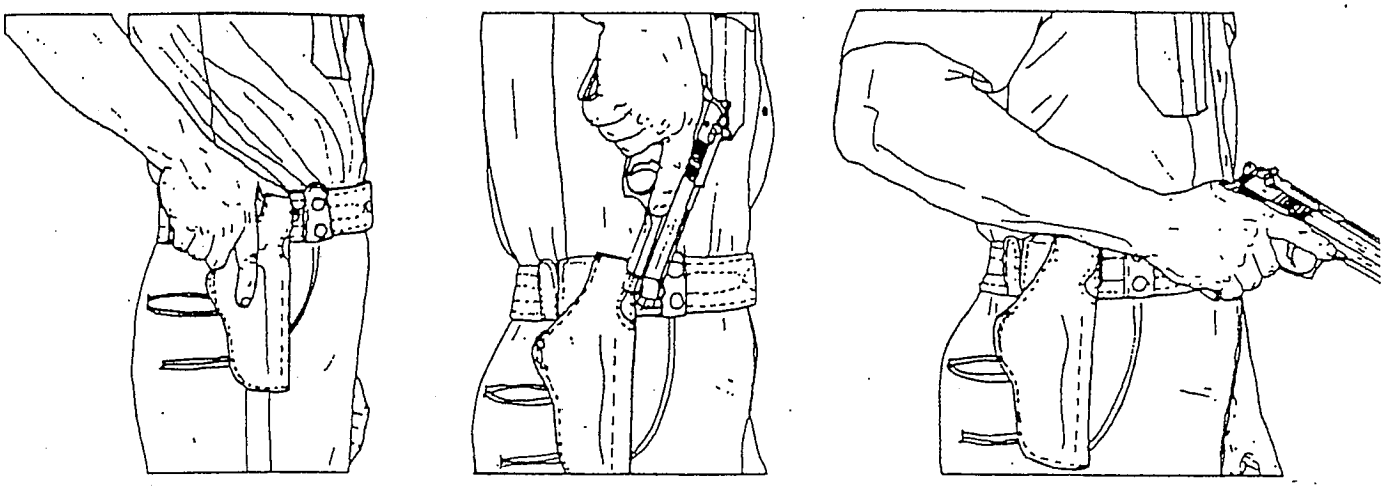


Strong or weak thumb may be used

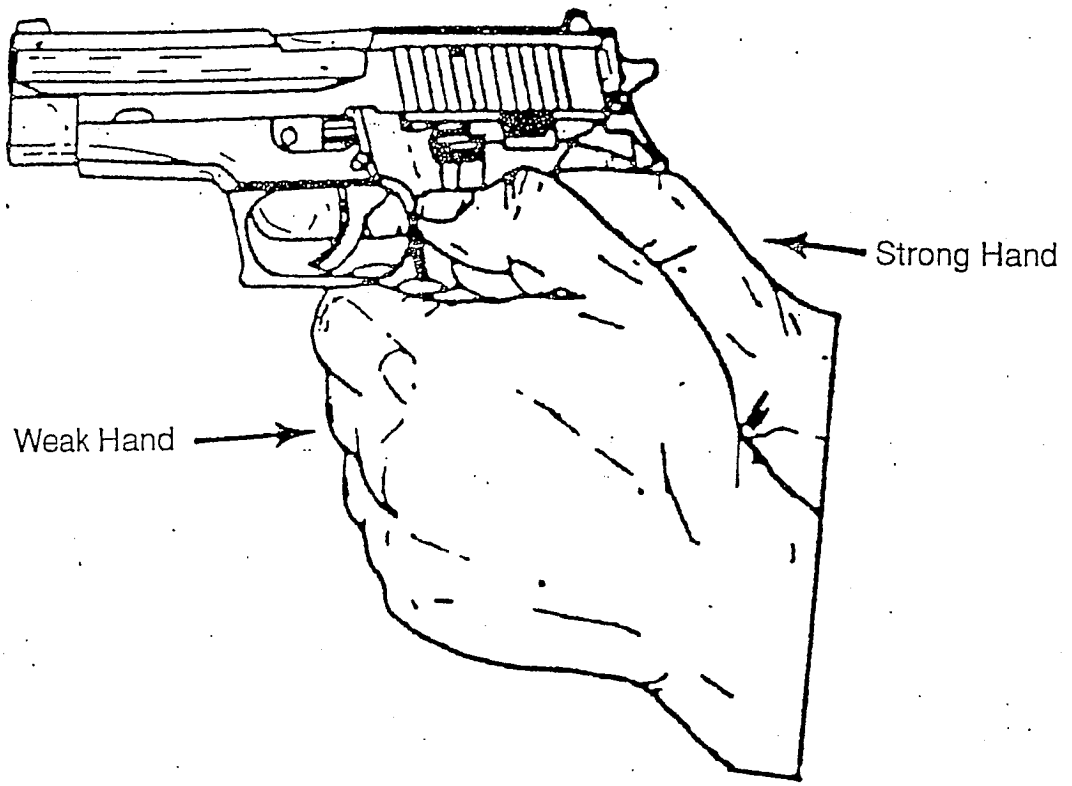


CORRECT DRAWING TECHNIQUE

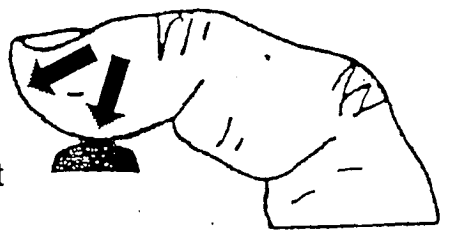
- CLOSE-IN FIRING -



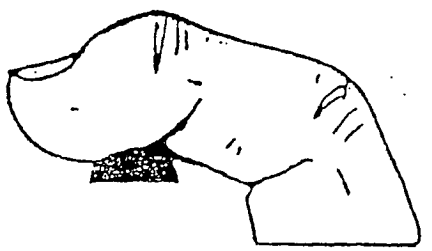
PROPER GRIP (TWO HAND)



PROPER TRIGGER FINGER PLACEMENT



Correct



Incorrect

Cleanliness Next To Godliness

The two officers were involved in a nonfelony traffic stop when they monitored a man with a gun run at a nearby location. Because of the nature of the incident and their proximity to it, they decided to respond as a backup to the crew that had received the call. They arrived on the location first. Stopping several houses away, they approached the location on foot, guns drawn. The suspect suddenly appeared from behind a tall bush, pointed his shotgun at the officers and told them to freeze.

The officers' response was instantaneous, and the street exploded with gunfire. One officer only got one round from his .45 Auto when it malfunctioned. Dropping his primary weapon, he was in the process of drawing a .38 snub from his rear pocket when a blast of 12 gauge birdshot struck him in the head. Falling to the ground, he finally got his second gun out and fired one shot before it refused to function further. Dropping this weapon, he ran to his vehicle and was in the process of removing the shotgun from its lock when his partner and the responding officers killed his attacker.

I happened to be in the community where the above incident happened and, being a good friend of the Crime Lab CO, I was given the opportunity to examine both weapons. The .45 Auto had a broken extractor and was extremely dirty, while the .38 snub was totally lacking in any trace of lubrication. The rounds in the weapon had to be pounded out with a wooden dowl.

Now the subject of cleanliness may not seem very exciting, but as the above true incident indicates, avoiding routine maintenance can have serious consequences. Of course, those who advocate the revolver or the automatic for police use, like to tell us that the other is unreliable. As the above also shows, both can fail without paying proper attention to detail.

I happen to carry a semi-automatic pistol on an off-duty, but it's kept scrupulously clean and lubricated. I have as much faith in it as I do in any mechanical device, but I always carry a second gun-just in case.

Regardless of whether you carry a pistol or revolver, the weapon should be cleaned whenever it's fired. Unless you're a graduate of one of the manufacturers' Armour schools, I suggest that you restrict your disassembly to removal of the slide from the frame and a thorough scrubbing of the interior of the slide and frame rails. The interior of the frame and its subassembly should be left intact and scrubbed thoroughly with toothbrush with one of the modern lubricants. There are a number of good ones on the market, but I've been using Breakfree since its introduction and I haven't found anything better.

Revolver disassembly should go no further than the removal of the cylinder from the frame and a careful scrubbing of both cylinder, forcing cone, and nearby interior with a toothbrush. The weapon then should be lubricated lightly and reassembled.

There seems to be a tendency to believe that if a little lubrication is good, alot is great. If you're not aware of it, these new lubricants have tremendous penetrative ability and will seep past primers to make ammunition inert. A police officer in a northwestern state found this out a few years ago, so remember to carefully remove any access.

If the condition of most law enforcement had guns causes con- the state of most riot guns should scare you to death. These weapons fall into the "carried often, fired seldom" category. If they're carried in vertical racks, their muzzles are often used for ash trays. If carried in horizontal racks (as my Department does) they often serve as foot rests, and as a result are covered with the salt that's used on snow covered streets. Other departments carry them in the trunk where they are subject to a different form of abuse. A friend of mine in a midwestern sheriff's department found that 70% of the shotguns carried by his department were inoperative from being carried there.

You may be of the opinion that department weapons should be maintained by the department, not you. That's a nice theory, but some dark night when you need the darn thing, the Armourer will probably be home in bed. My Patrol Supervisors vehicle carries four long guns; two carbines, a riot gun, and a sniper rifle. I never go on the street without making sure they work, and clean and test fire them every other month.

Cleaning weapons may seem like a boring task and one that has little relationship to the intended purpose of this column, but if you really feel that way, you should meet the officer mentioned at the beginning. He's just undergone his third operation, is blind in one eye, and will never be a cop again.

product proofing

Break-Free CLP

During recent months, a host of new lubricants have appeared on the market. I've tried several and was pretty impressed with them, but the most effective, by far, is one that bears the unlikely monicker of Break-Free CLP. Basically, the new product is a lubricant. Like several of its contemporaries, it has as one of its basic ingredients teflon, a material with superior lubricating qualities. The rest of the constituents are unknown to me, but some of them endow Break-Free with the capabilities of a cutting oil, while still others protect metal from rust and corrosion.

Applying Break-Free to several bolt and lever-actions gave immediate results: every rifle so treated functioned as though its action had been coated with oiled glass. I can think of only one, or maybe two, other lubricants that give an action that same slick feel.

Supposedly, metal treated with Break-Free resists fouling and is easier to clean than that coated with competitive lubes. To verify that, the Colt .22 conversion unit was called into service. It's one of my favorite lube testers. No matter how good a lubricant is or is supposed to be, most fail to prevent the floating chamber from seizing after a couple of hundred rounds or so. The best that any lube had ever done was to keep the chamber free for 250 rounds.

Before the test, the entire unit was cleaned thoroughly. Then, all moving parts, including the floating chamber, were sprayed with Break-Free before reassembly.

During the firing tests, the chamber was checked every fifty rounds. Recoil level told me that it was still functioning, but I wanted to see whether fouling was building up at the usual rate. It wasn't. One hundred rounds, two hundred, three hundred — not only did the floating chamber keep snapping open and shut, but until bullet four hundred went downrange, there was little accumulation of carbon or powder residue in or around the chamber itself. From that point on, the soot gradually began sticking to the metal, but the amount was still very small.

When bullet five hundred slipped through the target, I called the test to a halt. The chamber was still functioning perfectly. It wasn't as clean as it had been when the shooting started, but it had a long way to go before it would be dirty enough to freeze up.

Five hundred rounds of Long Rifle ammo leaves a lot of rubbish in a pistol: partially burned powder, flecks of lead, bits of bullet lube — the inside of the slide was pretty cruddy, to say the least. Nevertheless, another treatment of Break-Free, and all that gunk simply floated away. It was completely unnecessary to scrub any part of the floating chamber, either — and *that* was a first!

As a further measure of Break-Free's competence as a cleaner, thirty rounds of .357 ammo were made up using some commercial wadcutters backed by near-max charges of H-110. Those bullets were never designed nor lubricated to withstand velocities in excess of eight hundred feet per second or so. Kicked up to thirteen hundred plus, they leaded the bore like mad. The very first round left the last half inch of barrel near the muzzle choked. More rounds merely added to the problem.

After fifteen rounds, I set to work with brush and my regular bore cleaner. It took five complete treatments — a brisk scrubbing with a solvent-soaked wire brush, then a wet patch followed by four dry ones — before the bore resumed its old familiar glitter.

Then, the last fifteen rounds were sent on their way. This time, Break-Free was employed as a cleaning agent. Two treatments, as above, were all that were needed to dig the last speck of lead out of the grooves. And if you'd seen the condition of the bore before cleaning, you'd have sworn nothing could ever clean it out!

What about its qualifications as a preservative? Fifty rounds were fired through a .44 replica percussion pistol. Instead of using hot water to clean the handgun, I sprayed it with Break-Free and cleaned it as thoroughly as possible. Then, I put it on a workbench in the garage, and that's where it stayed for the next two months, exposed to below-freezing temperatures and a fair amount of humidity. In fact, there was a one-week stretch when it rained almost every day, and the air in the garage was so damp that I could feel it whenever I went out there.

At the end of the second month, the pistol was disassembled and examined carefully: not a touch of rust or corrosion anywhere, and the Break-Free itself was still shiny and moist. It doesn't seem to dry up completely.

Company representatives insist that unlike WD-40, for instance, Break-Free doesn't seep into primers and deaden them, even if the ammo itself is sprayed with the stuff. They advise against it, however. Out of curiosity, I drenched a dozen rounds of .45 auto ammo with Break-Free, being particularly careful to soak the areas around the primers heavily. Two months later, those same rounds were wiped dry, then fired in my Gold Cup. There was no misfire or hangfire. Every round fired as soon as the hammer dropped.

From my experience with it so far, Break-Free rates nothing but superlatives. If your local dealer doesn't stock any yet, write to San/Bar Corporation, Break-Free Division; 17422 Pullman Street; P.O. Box 11787; Santa Ana, California 92711. — Al Miller

For further information, contact:

BREAK-FREE
A Division of San/Bar Corp.
9999 Muirlands Blvd.
Irvine, California 92714

Phone (714) 855-9911
Telex 692-441

GUN-E-SACK

By Jon Sundra

■ I've mentioned before in this column how pleasurable it is for me to find any shooting-related product that really fulfills a need and/or works well. One such item I've been using for the past couple of years now is Break-Free CLP (for *C*leaner, *L*ubricant and *P*reservative). Like several other similar products on the market today, Break-Free is a blend of Teflon and petroleum distillates, but in my experience this one's the best of the lot. What I especially like about Break-Free is its ability to clean a fouled bore easier and faster than conventional solvents. And once cleaned with Break-Free the bore remains that way longer and is easier to clean on subsequent efforts. A few strokes with a saturated wire brush followed by a few patches and even the raunchiest bore comes up gleaming. For my money Break-Free would be worthwhile if all it did was clean bores, but it is also the best gun lubricant I've ever used. Most of my guns are bolt actions, single shots and over/unders, none of which actually *needs* lubrication, but with a little Break-Free on the bearing surfaces, it's amazing how much smoother they function. To illustrate: I have two pet rifles, one based on a Remington Model 700 action and another on a Ruger 77, both of which have been smoothed up as outlined in last month's feature, "Tuning Your Turnbolt." With a little Break-Free applied to the bolt body, lugs, raceways and cocking notch, the unlocked bolt on either gun will slide open when the gun is tilted only 14 to 15 degrees and cock with less than six pounds of bolt lift. With characteristic immodesty I must admit that says something for my tuning jobs but it also points up how good a lubricant Break-Free is. When I hand these guns to others and ask them to work the bolt, they can't believe it. While dry they're smooth, but with Break-Free the bolts glide as if on bearings.

Where lubricants actually become advantageous, if not necessary, is with semi-autos where the buildup of carbon and powder residue can put a gun out of action. Cleaned and then coated with a little Break-Free around the chamber area and slide, the usual buildup of crud simply wipes away.

In the two years I've been using Break-Free and testing it in various quasi-scientific ways, I'm convinced there's nothing better for firearms maintenance available today. And I'm far from being alone. A couple of years before I ever heard of the stuff, the Army began testing Break-Free in its usual super-thorough manner. Despite being about 65 percent more expensive than what it had been using, the Army has since adopted Break-Free for its M-16A1 rifle and M60 machine gun, as well as a host of other weapon-maintenance programs right on through 20 mm Vulcans, eight-inch howitzers and missile launch systems.

Break-Free is well known and widely distributed these days but if you can't find it in your local gun shop or hardware store, write: San/Bar Corp., 9999 Muirlands Blvd., Irvine, CA 92714. Break-Free comes in a variety of sizes in both aerosol and liquid, all with optional applicator tubes for getting into tight places and/or limiting the applied amount.

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Field Stripping Procedures

FIELD STRIPPING PROCEDURES

1. Place decocking lever (safety) in the ON position.

2. Remove magazine and empty, if necessary.

3. Move slide to rear and lock OPEN with slide stop check for empty chamber. (Place any ammunition in safe place away from cleaning area.)

4. Move decocking lever (safety) up to fire position.

5. Unlock slide and move disassembly notch directly over round part of slide stop and hold. Remove slide stop while holding slide in this position. (A fired case or a dummy round may be used to hold slide in this position.)

6. Slowly allow slide to move forward and pull off front of frame. The sear release lever will automatically drop hammer when slide is pulled off (keep hands away from hammer). As the slide is moved forward, the recoil spring and guide will start to appear on forward bottom portion of slide. Be sure to retain them with thumb of hand used to remove slide. Once slide assembly is off, set grip frame aside.

7. Remove recoil spring and guide from slide by moving forward and then away from barrel slightly. Always keep a firm grip on spring and rod. Allow spring to relax and remove assembly. Remove spring from guide.

8. While holding slide upside down, push barrel (at breech end) through ejection port with one finger to unlock from slide. With the other hand, grasp feed ramp area and pull up and to the rear until barrel is separated from slide.

9. You are now ready to begin cleaning.

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Cleaning Procedures

MATERIALS NEEDED:

1. Break-Free CLP.
2. Chamber brush.
3. Bore brush.
4. Cleaning rod.
5. Patch holder (eye).
6. Patches.
7. Nylon tooth brush (8-606-75).
8. Stainless steel tooth brush (8-606-70).
9. Rags or handy wipes.

1. BARREL.

   a. Using nylon brush and Break-Free, clean entire outside of barrel, including feed ramp, locking surfaces, and muzzle (stainless steel tooth brush may have to be used if barrel is extremely dirty. Use only if nylon brush does not clean adequately).

   b. Attach chamber brush to rod handle; use one drop of Break-Free in chamber. Clean chamber.

   c. Attach stainless steel bore brush to rod and handle; use one drop of Break-Free at breech end, clean barrel, move bore brush all the way through before attempting to reverse direction. Always clean barrel from breech end.

   d. Attach eye and patch to rod and run patch through barrel starting at breech end.

   e. Wipe dry and check barrel for cleanliness, cracks, bulges, deformities, burrs, etc.

   f. Put a light coat of Break-Free on entire outside of barrel. Special attention to locking lug and muzzle areas should be taken.

2. RECOIL SPRING AND GUIDE.

   a. Wipe off any loose debris from guide. Depress plunger to make sure it is spring loaded and does not stick in the down position. Apply light coat of Break-Free to entire surface.

   b. Wipe off any loose debris from spring and apply a light coat of Break-Free to spring (the spring may have a slight curve), but ensure coils are uniform and there are no kinks.

3. SLIDE.

a. Moisten all dirty areas with Break-Free. Use nylon tooth brush and brush entire slide inside and out. Pay special attention to bolt face, slide rail cuts, locking lug cuts, and rear of firing pin. The stainless steel tooth brush may have to be used on the bolt face to remove all carbon build up. Also ensure the hook portion of the extractor is clean (between bolt face and extractor).

b. Wipe entire slide down with rag.

c. Check slide for cracks, excessive wear, and burrs.

d. Check extractor to ensure it is spring loaded, the hook is not broken, and the pin is below flush on top and bottom.

e. Rotate decocking lever back and forth to ensure freedom of movement. Check for cracks and burrs, and that it locks into and has spring tension in the on and off positions. Make sure right-hand lever is locked into position.

f. Hold slide upside down, look inside and just forward of the safety. There are two plungers, one metal and one plastic, check these for spring tension and wear(the metal tip of mechanical pencil may be used). When depressed, they should return with their own spring tension and should not bind or be sticky.

g. Muzzle end of slide, check the busing that the barrel slides through; it must be slight.

h. Check front and rear sight.

i. Use a couple drops of Break-Free on a patch and wipe entire outside of the slide. Then, lightly oil the following areas: slide rails, locking lug cuts, safety (inside, and work safety a few times), and busing.

4. SLIDE STOP.

a. Use nylon brush and scrub entire stop.

b. Check plunger to ensure it is spring loaded.

c. Check for burrs and abnormal wear.

5. FRAME. DO NOT REMOVE THE STOCKS.

a. Moisten dirty area with Break-Free. Use nylon tooth brush and scrub rails and all other surfaces that are dirty. Care must be taken while brushing so bristles are not torn off and jammed between parts or small springs bent out of place.

b. Clean trigger and trigger guard area with brush and rag.

c. Cock hammer and clean. Decock after cleaning.

d. Use a rag and carefully clean magazine well.

e. Check for cracks, excessive wear, burrs, etc. Check for any visible broken or missing parts. The ejector (on left side of hammer), and the sear release lever, and firing pin safety lever (on right side of hammer) should move up and down freely and have some spring tension on them. (Ensure hammer is in down position before testing the levers.)

6. MAGAZINE(S).

a. Remove floor plate by depressing plunger through hole. Once floor plate starts to move, remove punch. Push floor plate off with one hand and use thumb of other hand to hold magazine spring in place. Now allow spring to relax slowly. Remove spring and follower. Do not remove tab from spring. Clean inside of magazine with dry rag (no oil). Wipe off follower and spring. Check follower for chips or cracks.

b. Reinstall follower (will only go in easy one way).

c. Reinstall spring and tab (the magazine and tab have square and rounded sides, these match). Depress spring and slide floor plate back into place. When floor plate is in correct position the tab will lock it into place. Sometimes, you may have to tap magazine on bench to get button to snap into hole in floor plate.

CALIFORNIA HIGHWAY PATROL

Smith & Wesson Semi-Automatic Reassembly/Function Check

1. REASSEMBLY.

   a. Ensure hammer is in the fired (down) position in the frame and the decocking lever is in the fire (off) position in the slide.

   b. Install recoil guide into spring.

   c. Replace barrel into slide. Barrel must be locked into the slide before installing recoil spring and guide.

   d. Install recoil spring and guide. Rear end of guide must lock into the small cut-out on the bottom of the barrel. Once in place, spring and guide must be held in position until slide is started back into the frame.

   e. Line up slide rails with frame rails and start slide to rear. Push slide back until it almost touches the ejector (left-hand side of hammer). Depress the ejector and the slide will move back approximately 1/2 inch. Now, depress the firing pin safety lever and sear release lever (right-hand side of hammer) and push slide to rear, over hammer, until the disassembly notch in slide lines up with the slide stop hole and hold it in this position. (There will be some resistance while moving the slide to the rear. This is due to the tension from the recoil spring and recocking of the hammer.) Make sure the barrel is pushed all the way to the rear and install the slide stop. (A fired case or dummy round may be used to hold slide in this position.)

2. FUNCTION CHECK.

   a. Work slide back and forth, check for roughness or stickiness.

   b. Check decocking lever for proper operation. When rotated to the on position, hammer must drop.

   c. Manually check slide stop (magazine out). Pull slide to rear and move slide stop up with thumb. Release slide.

   d. Empty weapon and magazine.

   e. Insert EMPTY magazine, place decocking lever down, pull trigger. HAMMER MUST NOT FALL. Rotate lever up to fire position; hammer must fall DA and SA. Decocking lever in fire position, remove magazine, hammer must not fall DA or SA.

f. Empty magazine installed, pull slide to rear, slide stop must lock side to rear. Remove magazine, pull slide to rear and let go. Slide must go all the way closed on its own.

g. All empty magazines must drop free on their own with the slide closed and locked open when the magazine release is pushed.

h. Decock hammer.

NOTE: If your weapon is damaged or dropped, give it to the Area Weapons Officer to inspect.